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ABSTRACT

A study examined the decision-making stage in the curriculum development process in vocational programs throughout Australia. Data were collected from interviews from a network of persons currently involved in curriculum development and case studies of the curriculum development process in action at 16 vocational schools throughout Australia. Although information on curriculum options was found to exist within the Technical and Further Education (TAFE) agencies, biases and knowledge gaps were discernible in the case studies. Although many curriculum decisions are predetermined by outside factors, such as industrial award agreements, it appeared that other decisions were being made without proper assessment of the options available. Particular confusion existed on issues such as the use of modules, self-pacing, and mastery learning. There was a very uneven awareness of entry and exit issues, articulation, and flexibility of testing; and the options of distance education and degrees of individualization were virtually neglected. Thus, the data indicate that curriculum developers, especially the less experienced ones, need a better grounding in curriculum issues and the curriculum options open to them. At least some curriculum developers need more guidance and more confidence in the art of choosing which data are needed to make more effective decisions. Little guidance in anticipating or dealing with the hidden forces of the curriculum process currently exists. (The instrument used in interviewing curriculum developers is appended, and 71 references are listed.) (MN)

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TAFE National Centre
for Research and Development

# CURRICULUM DECISION MAKING IN TAFE

Clare McBeath

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## FOREWORD

One of the problems of writing about TAFE curriculum issues from a national perspective is the existence of wide differences of approach between some States and Territories. The researcher must be aware of the possibility of alienating readers of one State while attempting to present the views of another. In spite of this, an effort has been made to include issues and views which are not accepted officially in all States, such as the instructional systems approach used in Victoria and A.C.T. Interestingly enough, such differences prove to be more important theoretically than in practice.

Diversity of approach is reflected in the literature outlined in Chapter 2. The earlier sections of Chapter 2 are devoted to broad curriculum issues and mirror the developing philosophy of vocational curriculum in Australia. Much has also been written, however, under the heading of curriculum which strictly belongs to the field of instructional strategy. Modular design and mastery testing, for instance, are topics which concern systems curriculum developers, and much curriculum literature from Victoria refers to these topics. Others dismiss them as curriculum red herrings.

Another difficulty lies in summarising TAFE curriculum literature, in that very little of it consists of published research. Many of the references given are internal mimeos, based on preliminary investigations, policy directions, and descriptions of curriculum procedures. Curriculum in TAFE is a relatively new field and one of developing concepts. Much of the work quoted is not research in the strictest sense, but for the time being it must be considered important in that it points the way to the development of new concepts.

This report is structured in such a way as to reflect the changing tone of thinking in Australia in recent years. The early chapters indicate the kind of theoretical questions which were being asked in the search for 'correct' answers in a new field. Chapters 4 to 6 report the case studies, and indicate the reality of practice and concerns in the field. Chapter 7 extrapolates new directions arising from the case studies, exploring the questions which are of

immediate concern to practising curriculum developers, but which were not apparent at the early stages of the research. Chapter 8 summarises these directions, draws conclusions and indicates new questions for curriculum research and development in TAFE. The early chapters thus lay the historical foundation for the case studies and the ideas emanating from them, and in this sense should be read with caution. The later chapters are more important in that they represent present reality and future possibility.

This report is specific to TAFE curriculum development in Australia and will be of use to practising curriculum developers as well as to curriculum managers responsible for shaping TAFE curriculum philosophy. The case studies and later chapters will also be useful to curriculum students and inexperienced curriculum developers beginning new projects.

Acknowledgement is due to the interest and assistance of the members of the Advisory Committee: Graham Hermann, Margot Pearson, John Stevenson, Jim Grosvenor, John Mitchell and Charlotte Sandery; also to those Curriculum Projects Steering Group members who supported the project and facilitated contact with curriculum staff in five States. Special thanks go to the sixteen case study respondents who gave their time for interviews, discussion, reading and commenting on parts of the report, and without whom the project could not have been done. Acknowledgement is due also to Margaret Cominos who edited the report and to Sue Butters for word processing.

# 1. THE PROBLEM FOR TAFE

## 1.1 INTRODUCTION

Throughout Australia a significant amount of energy, finance and time is being expended by TAFE Authorities in the analysis of various occupational areas. The purpose of these projects basically is to establish the needs of industry for the training of its recruits in TAFE Colleges. Occupational analyses, on both State and national levels, have been producing enormous quantities of data on the requirements of areas as diverse as tool making, beauty therapy and gardening. The data are then translated into educational objectives, and new and revised vocational courses built around them. The assumption is that when educationists can see clearly what the requirements of industry are, they will make more realistic decisions about the content, structure and accreditation of vocational courses, and produce better trained workers. In the words of one curriculum writer, Shahid Khan (1983),

> The occupational analysis allows the course designer to identify the skills and abilities which need to be developed for the occupation. Therefore, the course content developed on the basis of occupational analysis will be based on objective information rather than subjective judgements. (p. 10)

This makes a lot of sense. Curricula designed around the findings of occupational and task analysis will reassure employers that the skills and knowledge of trainees will correspond to those they require for successful employment. Vocational education programmes will have a definable relationship with specific occupations. Outmoded tasks and techniques will be eliminated from training. Time will not be wasted learning about materials no longer used in industry. The need for modern equipment and technological developments will be identified and their use incorporated in vocational training. Students will be reassured that they will not become '... locked into dead-end jobs while shortages exist for properly trained ... personnel ...' elsewhere (Gullion, 1973, p. 1). State funding and support will be more readily available when educational need is seen to coincide with employment need. Colleges will have less

justification in neglecting areas which are difficult or expensive to teach. Instructors will be more easily convinced that the procedures in which they excelled when they did their training are not necessarily pertinent to present day courses.

It is generally believed that 'today, more than ever before, vocational education must be responsive to the employment market' (Forgione & Kopp, 1979, p. 3), and methods of occupational data collection and analysis are held up as the most efficient way of assessing that employment market.

There are dangers and shortcomings in a move to base vocational curriculum reform entirely on the needs of industry, but as data collection and analysis methods are developed and improved, few would argue that this approach is of value to curriculum developers and that it will be with us for some time to come. It is in line with the main thrust of curriculum theory during the past two decades that the first step should always be an assessment of need. Occupational analysis is seen currently as the approach best suited to assessing the needs of industry, and hence of industrial training programmes.

## 1.2 DIFFERENCES BETWEEN TAFE AND SCHOOLS CURRICULUM

Given the occupational data, a curriculum developer (or development team) is expected to translate them into plans for an educational programme. This is the curriculum design stage, where the educational needs of students, instructors and institutions are incorporated with the needs of employers. Since 1969, when Schwab called for the development of a practical and eclectic set of principles to guide curriculum deliberation and decision-making, much has been written about this stage. 'Whatever the deficiencies of curriculum design by the end of the 1970's' writes Pratt (1980) 'they were not due to lack of effort'. More people, he states 'poured more energy into curriculum than ever before' (p. 37).

Most of this curriculum effort, however, like the programmed instruction and psychology centred writings which preceded it, pertains to schools-based curriculum. During the last twenty years it was the needs of schools which spawned the discipline of curriculum, and it was in reference to primary and secondary education that its major issues were first identified. The task force on Procedures and Practices in Curriculum Development in NSW summed up the problem as follows.

> A ... problem for TAFE is that much of the curriculum literature available refers to the curriculum process in the classroom, and is derived from experiences in education at the primary and secondary school levels. (Anderson et al., 1982, p. 15)

The problems and solutions of schools-based curriculum do not transfer easily to practice in vocational education. The answers it has found to questions regarding student needs, sequencing, escalation, delivery methods and even student assessment are not necessarily relevant to vocational education for adults. Furthermore, developers in schools can make assumptions which cannot be made in TAFE. They are not required to ask similar questions about the duration of a course, staffing needs, attendance patterns, funding and accreditation, nor to approach such matters with the same degree of choice as TAFE developers have. In fact, typical advice to the schools-based developer is contained in a warning by Bailey (1975):

> Do not design a program that varies from the basic school practices, such as grade level, length of classroom time or the number of days in a semester or year. (p. 105)

All these factors are open to question and discussion in the TAFE context. TAFE developers don't have to work within school-type organisational constraints.

The NSW Task Force (Anderson et al., 1982) pointed out that the schools-based curriculum view contained in much of the literature does not 'distinguish between curriculum and instruction, between the planning of the outcomes of curriculum and execution of the plan'. They emphasise that implicit in much of the schools-based literature is the assumption that 'a teacher or a group of teachers are responsible for all the steps in the process', whereas TAFE teachers have only 'varying degrees of input into the components involved ... ' (p. 15).

The Tertiary Education Commission in 1979 stated

> There are relevant differences between students and teachers in TAFE and students and teachers in schools ... There is considerable evidence that the teaching/learning process for mature TAFE students shares as many differences with the teaching/learning process for school children as it does similarities ... TAFE institutions present

> to their teachers attitudinal and motivational challenges quite different from those faced by teachers of adolescents in secondary schools. (Cited in Kennedy, 1985, p. 56)

It is possible that, in schools, the very meaning of the curriculum process is different from that used in vocational education. There is probably no final answer to the old debate about process and product, but vocational training has tended to be far more concerned with the 'product' than schools, and especially so when it is based on occupational data. There are indications that this may be changing in some TAFE Authorities. Schools on the other hand are committed to 'process' as part of their philosophy.

## 1.3 VOCATIONAL CURRICULUM IN THE LITERATURE

While there is an abundance of literature on vocational curriculum, much of it from the United States, the bulk of it deals with occupational analysis. There is a paucity of work on the process of translating occupational data into curriculum, and on the philosophy of developing training curricula. There has not been a movement in vocational curriculum equivalent to that in the schools. Much schools-based development concentrates on pragmatic and common sense decision making, with roots in interpretive and responsive methodologies.

It is becoming more common in the literature of vocational education to find advice in favour of flexibility, imagination and common sense, as distinct from the more restrictive approaches of the last few years.

> (There is) ... no curriculum theory that promises to yield better results than a pragmatic approach that relies on highly qualified staff and applies available theories without dogmatism. (Karplus, 1975, p. 74).
>
> ... the standard by which we should judge the merits of curriculum strategy is the degree to which it results in improvements in the learner ... (Popham, 1975, p. 93).
>
> ... a course goes beyond the acquisition of specific skills, for the aim is to produce not only a competent typist but also one able to cope effectively with new situations not taught

> specifically on the course. (Hermann et al., 1976, p. 124).
>
> ... survey documents not only listed a schedule of tasks ... but considered the implications of that information ... (Haworth, 1980, p. 13).

Comments such as these indicate a movement towards pragmatism and critical dialogue perhaps more common in the schools-based curriculum debate. It is far outweighed, however, by an abundance of procedural models such as those based on the United States Armed Forces system of course development. The object of such linear models in the majority of examples is to translate occupational data into lists of performance objectives. From there, it is expected that the developer will be able to make all further decisions to produce a training programme.

> Given this level of content identification, the TOPs [Terminal Performance Objectives] and associated task data now became the basis for accomplishing the subsequent stages of curriculum development and instructional preparation, including the sequencing and designing of learning experiences. (Ammerman & Essex, 1977, p. 51)
>
> A thorough analysis ... provides invaluable data. In addition to definition of objectives, the procedure clarifies learning priorities, instructional time estimates, and needed supplies, and provides guidance for the design of instructional methodology and evaluation. (Pratt, 1980, p. 171)

There are many different models, with virtually every project defining a new method of analysis and a new procedure. Many of them can be regarded as emanating from systems analysis.

The concept of the instructional systems model, it is argued by its supporters, 'is not a collection of techniques for developing a curriculum'. It must not be seen 'as a lock/step process', nor involve the 'establishment of narrow, industry specific courses', but rather it should deal with 'the identification and detailing of possible variables in a given situation' (TAFE Vic., 1980, p. 14). This flexibility explains the proliferation of models in the literature, but it does not explain the gaps and confusions which typify the greater part of the literature on vocational curriculum development.

## 1.4 CONFUSION IN THE LITERATURE

As in any new area of study, the technical language of curriculum has exploded into a vast cacophony of words and sounds. Education, instruction, training ... ; goals, aims and objectives ... ; jobs, duties, tasks and skills ... ; competencies, attitudes, knowledge and behaviour ... ; major duties, operative tasks, specific operation, area of competence, abilities ... ; performance objectives, behavioural objectives, terminal objectives, specific objectives, enabling objectives ... ; curriculum, curriculum document, curriculum content, syllabus, structured outcomes ...

Curriculum developers are by now familiar with much of the language, and in most cases would understand and accept the meaning of the words in context. It is when a developer tries to choose the best word in his own context that confusion occurs. Consistency is difficult to attain unless the developer chooses to follow one guru and ignore the others. Curriculum vocabulary is transferred across models apparently with difficulty. Does a competency include knowledge and behaviour? Can a performance objective include attitudes and knowledge - or 'knowledges' as we frequently find it in the literature? What is the difference between mastery and achievement? When should enabling objectives be tested? There are two sets of implications in the word 'content'. 'Competency' can be used as a standard of performance or as the basis for a whole philosophy of performance-based instruction. The concepts of norm-referencing and criterion-referencing lead to endless debates over marks and mastery. The term 'mastery learning' is used both as a general term and in a very specific context. And there are those ubiquitous plurals - syllabuses or syllabi, curriculums or curricula, not to mention the inexplicable rarity of the adjective 'curricular'. There is little consensus in the literature, and the confusion is compounded when developers from Australia's eight TAFE Authorities meet together to attempt curriculum projects on a national scale.

There appears to be a further lack of consensus on the meaning of the word curriculum, and the role of the curriculum developer. Gullion (1973) in her literature review came to the conclusion

> that the terms used ... were often undefined or used in inconsistent ways by different authors. The most common problem was a failure to distinguish among different types of educational activities. (p. 7)

Many published accounts of curriculum projects, especially those coming from the United States, are described as 'process manuals', but make no further claim than the achievement of 'a curriculum outline'. One might question the usefulness of an 'outline' to busy instructors, but it is the nebulous use of the word 'curriculum' which is at issue. Forgione and Kopp (1979, p. v) describe a vocational curriculum development project as 'acquiring, organising and describing information on ... occupational areas', and then 'matching available curriculum materials with ... ' it. Haworth (1980) complains

> More often than not the syllabus outcome of the programmes developed is a list of behavioural objectives structured in an order considered appropriate to facilitate training and to supposedly lead to 'employability in the world of work'. (p. 9)

Ammerman and Essex refer to curriculum as 'a structured series of intended learning outcomes' (1977, p. 43), and they indeed end up with little more than a list of structured behavioural objectives.

Gullion (1973, p. 22) argues that curriculum development as such must be separated from programme design and instructional planning and that separate expertise is needed at each stage. She sees it as 'the teacher's responsibility', for instance, 'to plan learning experiences, to select appropriate ... content ... and to select materials' (p. 28). In a significant number of writings, curriculum developers consciously isolate themselves from the issues of professional educationists, with the clear expectation that the educationist will pick up where they leave off. Others contend that the curriculum expert and the teacher must work together on every stage of development. Shahid Khan advocates, 'For each course the curriculum developer should provide assistance to the teachers in regard to how to teach the course'. Many teachers, however, would feel that this is going too far.

If there are confusions in the terminology and with the role of the curriculum developer in the development process, there is even more of a plethora of conflicting ideas about procedure. It is not practicable here, nor particularly useful, to attempt to compare the many recommended versions of vocational curriculum development procedure. It depends on the nature of the occupational data collected, where the developers begin, and in what order they proceed. Some begin, (and some end) with a statement of objectives, while

others begin by determining the programme structure before they define objectives. Some decide on 'content' and call it 'objectives', while others sequence the content into learning units before writing the objectives. Some specify the learning process before identifying topics or outcomes.

In some cases the student body and the teaching institution are identified as part of the occupational survey, or even before it is initiated; in others this comes much later, sometimes after the courses have been written and published.

Although many writers stress the importance of procedural structure, very few appear to have recognised the inherent problem. Ammerman and Essex are referring to 'learning outcomes' when they write,

> The problem of ordering or structuring remains an important challenge for the future. There needs to be a means for indicating any necessary or preferable groupings. This structuring should be one that promotes ... learning ... It may not be the same as task groupings found in the work setting, such as intended by the duty categories suggested for the occupational survey listings of tasks. (1977, p. 43)

Writing in the schools-based context, Posner and Strike (1976) identify 'content' structure as a generally unknown area.

> The question of how content should be sequenced and ordered has been the subject of educational debate for at least the past 10 years ... However, no satisfactory answer has been developed, and no adequate prescription is expected in the near future. (p. 665)

On the structure of curriculum development itself, the Oregon State Department of Education (1977) states, 'There is no official, standardised procedure for curriculum development' and claims it should be seen rather as 'commonsense by design' (p. 25).

## 1.5 GAPS IN THE CURRICULUM PROCESS

Strong claims have been made for the usefulness of occupational survey and analysis methods as a basis for curriculum development. Their greatest value obviously lies

in the contact they provide between the training institution and industry, and their up-to-date description of occupations and jobs. They may also include an analysis of job tasks and skills, and empirical data on the importance of tasks and how frequently they are practised. From this, the relevance and significance of each task should become clear. Pratt (1980) claims that these data, correctly analysed, enable the developer to define objectives, clarify learning priorities and estimate instructional time and supplies needed. They should also 'provide guidance for the design of instructional methodology and evaluation' (p.171). Further claims are made by others.

> The utilization of the Task Analysis Process in the curriculum planning process produces a clear concise description of the educational program, its occupational relationships, objectives, the scope and sequence of its courses, course content and prerequisite and requisite requirements. (Ripley & Arredondo, 1980, p. 2).

Others direct what should be done with the information, without indicating the link between such decisions and the data.

> Once an analysis of the job has been undertaken, student performance objectives should be prepared after tasks which do not require training have been eliminated and tasks which cannot be taught entirely in the training environment have been modified. (TAFE Vic., 1980, p. 38)

It appears that many writers believe that the analysis of occupational data is enough to point the way to making sound decisions about educationally valid vocational courses. The NSW team (Anderson et al., 1982) sums up the problem.

> ... data gathered for determining what it is to be learned, will not necessarily and directly support decisions about planning instruction ... When, in various linear models, sequences of activities are described, the inference is that once the training objectives are established, all other decisions can be derived in a logical progression (p. 19).

A very thorough and detailed document on curriculum development procedures used in one Department of TAFE is a typical example of the assumptions being made. The initial Curriculum Proposal requires a 'discussion' of the central questions; the Curriculum Committee must provide

'interactive advice' on them to the manager of the working party; the working party must 'analyse', 'clarify', 'develop', 'devise' and 'prepare' statements on them; the Curriculum Committee, the endorsing College, the Academic Review Panel and the Accreditation Panel must approve them; but not one of these bodies has the benefit of a clear set of guidelines on which to base its decision-making. All decisions presumably emanate from 'professional judgement' (SA TAFE, 1985).

An occasional article highlights the very obvious gaps by attempting to bridge them subjectively. '"Importance" is a relative, value judgement which must be made by the curriculum writer,' state Ripley and Arredondo (p. 13). 'There is no way ... to completely remove professional judgement from the curriculum identification process' add Ammerman and Essex (1977, p. 33). 'There is really no "recipe" for bringing about successful change, past some well tried methods that seem to have worked in other situations' (Kennedy, 1985, p. 55).

The implication is that either enormous intuitive leaps are being made by curriculum developers - professional judgements based on knowledge and experience rather than conclusions based empirically on the data - or else some very important questions are not being dealt with in an otherwise tightly defined procedure.

## 2. SOME ISSUES IN VOCATIONAL CURRICULUM LITERATURE

### 2.1 SERVING TWO MASTERS

Much has been written about the purpose of vocational training, whether it should be specifically and exclusively to suit the requirements of industry or whether the social, emotional and intellectual needs of the students should also be a TAFE responsibility. Jenkins (1983), writing about engineering courses in European universities, sums up the problems involved in preparing skilled people in single occupational categories.

> ... the idea of developing personal qualities which would help the engineer, as he or she matures, to undertake a more responsible and effective role in society - education for life - is not usually regarded as being a legitimate part of engineering education today. Indeed, in France, there is evidence that the view being held is that the needs of professional career are not compatible with the general aims of personal development and that to attempt to cover both these aspects in one course should not be contemplated. (p. 7)

The goals of industry and those of education and society are often seen to be in conflict, and this is an area of vigorous debate in TAFE. In spite of their claims to be the providers of efficient and relevant training based on industry need, TAFE educationists find it difficult to surrender the principle of developing the whole person, inherited from a long and rich tradition of educational philosophy and practice. A number of writers identify both purposes as important in TAFE.

> ... general and vocational education should not be artificially separated. Most forms of general education are vocational for at least some students. Again all vocational education affects the learner as a person and therefore has some general educational effect. The implication for vocational education is that training in the narrow sense can be a serious disadvantage for the student, both in terms of personal development and

in acquiring the basic understanding that is needed for continuing education, and for acquiring other vocational skills. (Kangan, 1974, pp. 7-8)

... there is the industrial manpower view which sees their main purpose ... as being producers of skilled manpower for the development of the economy; and an educational and social view, where the emphasis is on the individual's development of his or her potential. (Broderick, 1981, p. 21)

... the role of TAFE should encompass more options for the individual than merely job preparation. In reactions to this there can be detected the view that vocational education ... [is] somehow separate, and that non-vocational education is the icing on the TAFE cake. This is a view which the Kangan Committee would have rejected, as it rests upon a limited understanding of the concept of recurrent education. (Hawke & Sweet, 1983, p. 2)

... the curriculum content is that which is specifically relevant to preparation for technically competent and socially acceptable performance in the occupation in question. (Gullion, 1973, p. 32)

The arguments in favour of a broad based general education component in vocational courses are emphasised also from the point of view of industry need. Business leaders, it is claimed, are finding that graduates of vocational courses are unprepared for today's world of work.

Contemporary jobs require much more than technical skills, the traditional approach of vocational education. Today's workers must be able to use their skills in a variety of settings, be willing to learn new technical skills, and be skilful at communicating and working with others. (Tjosvold et al., 1981, p. 9).

The speed of technological advances, the shift to service-orientated jobs, new hiring policies, and movements for women, minorities, and handicapped persons all underscore the inadequate, exclusive emphasis on teaching technical skills in vocational education. (Tjosvold et al. 1981, p. 10).

The writers say that business and industry are starting now to demand employees who are able to 'co-ordinate their efforts with others, resolve conflicts, communicate effectively, find their relationships satisfying, influence others and be open to influence' (Tjosvold et al., 1981, p. 10).

> ... the fear is that students will be too narrowly educated and not prepared to participate fully in the broader spectrum of life. (Elebash & Cutchen, 1983, p. 151)

The writers are making a case for including 'liberal' and 'universal' skills in Business Education courses, and claim that future employment will be enhanced if students have understanding and effective communication skills.

> Underlying these traditional approaches to curriculum development are a set of assumptions, one of which is that the objectives of a course are to be derived from the needs of industry for a job or range of occupations. Student interests are assumed to be served by receiving training recognized by industry ... Students' vocational and educational needs ... include the need for education which can be the basis for job mobility, gaining employment and retraining. (Pearson, 1983, p. 19)

Thurow (cited in Kennedy, 1985, p. 55) argues further that 'specific job skills can best be learned on the job, if a worker's general background is sufficient'.

Kennedy (1985) emphasises the point.

> This is a salutary warning for TAFE since traditionally it has concentrated on preparing skilled people in single occupational categories with no reference to general education. (p. 55)

## 2.2 OCCUPATIONAL DATA COLLECTION AND ANALYSIS

In 1974 the Kangan report recommended the need for greater relevance in TAFE programmes, urging further research to facilitate

- development of improved and increasingly more reliable and valid methods of assessment and

reporting of students' educational achievements ... ;

- more frequent revision of curricula in light of technological, social and other changes ... ;

- the redesign of courses to integrate social and communication skills ... with technical skills and give students a broad awareness of the social implications of technological and other emerging developments ... (pp. 39-40)

Anderson and Jones (1983) report that methods of collecting and analysing occupational data on course needs and demands 'evolved within the curriculum research and development units of TAFE Authorities' in accordance with the Kangan recommendations.

The Broderick Report (1982) claimed that 'well planned and researched data gathering mechanisms ... and more refined occupational analysis' were being used by TAFE Authorities. These, the report stated

> ... allow the writing of course aims and objectives, along with subject terminal objectives. With such validated research data, course planners and developers can, and do, design TAFE vocational curricula which are relevant to the employment needs, and moreover, the research data allows reasonably accurate estimates of the demand for the course. (p. 24)

McKinlay (1976) cites much of the early work in occupational analysis developed from the United States Air Force model (Morsh 1967, Christal & Madden 1961), which used questionnaires, observations and interviews 'to formulate descriptions of jobs comprised of a series of specific task statements'. Further elements of job analysis introduced from United States' sources, such as, McCormick and DeNisi, 1976, (position analysis questionnaire); McCormick, Jeannert and Mecham, 1972, (prediction of occupational mobility); Cunningham, 1975, (occupational analysis inventory); Fleishman, 1967, (worker traits), and others, are also cited by McKinlay, 1976, p. 7, who writes:

> The applicability of job analysis to education seems to be at the detailed level of instructional content, where specific skills and knowledges are to be learned ... [Its use eliminates] many of the skill gaps that occur in vocational curricula. But

> career education is more than skills training ... (p. 10)

Doubts were still being raised in the United States when the techniques were introduced to Australia as a part of the vocational curriculum development process. Anderson and Jones (1983), drawing from the Broderick Report, summarise the main features of occupational analysis and its adoption and adaptation by TAFE Authorities, as follows

- followed a fairly common format and sequence called the 'systems approach';
- Victoria and ACT TAFE followed the model both nominally and in practice, while WA and QLD TAFE adhered to it tacitly;
- NSW TAFE most frequently used the structured industrial survey by face-to-face interview as its data collection methodology;
- all TAFE Authorities used advisory/curriculum committees to derive data;
- DACUM technique was used by QLD TAFE;
- only NSW and VIC TAFE surveyed ex-students to gain data;
- all TAFE Authorities consulted industry personnel.

A national workshop on occupational analysis held in Perth in 1982 identified a wide range of methodologies being used to obtain skill/task inventories, job specifications, job descriptions, competency profiles and process/decision charts (Clover & Goode, 1982). While these can all be loosely described as 'occupational analysis' and all are useful for curriculum development, they are yielding different kinds of information for different developers to work with. Clover and Goode (1982) identified further problems.

> In the very near future vocational education will be facing a major challenge to keep up to date with rapidly changing technology; for as the rate of change increases, the time lag which is intrinsic to the nature of reactive processes produces obsolete curricula. (p. 16)

Clover and Goode point to the increasing use of DACUM as a training needs analysis tool, as producing reliable data in a relatively short period of time, and to the need for TAFE to become 'proactive' in relation to technological and industrial change.

Anderson and Jones (1984a) are also looking at 'newer, faster and less costly methods'. Industry, they say, has become 'openly critical of the time and costs involved in many of TAFE's responses to problems requiring the analysis of occupational ... needs for curriculum development' (p. 2). Their study proposes to identify 'techniques which emphasise "fast-response" and "effectiveness" for the purposes of curriculum design and review' (p. 2). The end point for the data gathering and analysis phase, they write, 'is taken to be that point at which curriculum developers have the information they require to begin to document the content and student learning objectives' (pp. 8-9).

## 2.3 ARTICULATION AND ESCALATION

Hermann, Richardson and Woodburne (1976) stress the importance of ensuring that course planning offers 'the opportunity for people ... to proceed to a more advanced course' (p. 190). There are always people, they point out, who select a less appropriate course due to lack of guidance or finance, or 'late developers', or even those who consciously plan to steer their training through several courses. Hermann et al., (1976) describe as a 'major issue' the choice of whether courses should be designed 'on the escalation principle' or as 'intrinsic entities'. They write

> The elitist position formulated within the framework of a pyramidal conception of education gives priority to escalation. This position in a pure form increasingly is being rejected for the intrinsic entity position. (p. 189)

They also held that in science and engineering courses practical courses should be preceded by basic theory subjects such as mathematics, physics and chemistry, but caution

> There will be vast differences, however, in the amount of theory, depth of theory, pace at which theory is taught and degree of specialisation among trade, trade-technician, technician and technologist courses ... Attempting to make one

> course serve two disparate functions tends to result in schizophrenic breakdown. (pp. 189-90)

The problems associated with 'academic class distinction' are highlighted by a report from the Commonwealth Education Liaison Committee (1967) in the United Kingdom, as follows:

> The technician was ... educated through ... a course which endeavoured to provide both technician and professional qualifications. This not only produced a distortion of the curriculum, as far as technician needs were concerned, but resulted ... in only a minority of students reaching the professional level. Thus the image of the technician as the 'failed professional' tended to emerge. (p. 79)

Important questions for curriculum developers, according to Hermann et al., (1976) include:

> Should a technician course commencing after the completion of Grade 10, in addition to preparing students for a specified set of industrial functions at technician level, attempt to prepare students for university by also providing the equivalent of Grades 11 and 12 school subjects?
>
> Should a trade course be primarily designed to prepare students for a technician course, or should a technician course be primarily designed to prepare students for a professional course? (p. 214)

They answer their own question with a quotation from the NSW Principles for Certificate Courses, stating that occupational courses 'should be complete in themselves, and should not have their character altered to serve some other purpose' (p. 222). They advise thoughtful articulation between 'adjacent pairs' of courses, including relevant entry exemptions and bridging courses, along with the thorough validation of entry level knowledge and behaviour (p. 190).

The problem for curriculum development, according to Hermann (1971) is

> to formulate a balanced system which caters both for the majority of students who seek an industrially-relevant course at a specific level and the minority of students who desire to move

> from one course to another as smoothly as possible. (p. 4)

Gullion (1973) points to another aspect of the issue. The accredited training course offered may sometimes culminate in less relevant credentials than students already have from their experience on the job. They may be 'of little use for upward mobility or even lateral movement in the open job market' (p. 2).

The analysed data, she states, should include information on the 'upgrading sequence', and courses should be arranged to reflect rising levels of related skills and knowledge.

> The educational costs and training time between each step on a ladder can be kept to the minimum needed to bridge the gaps between jobs. This would be far less than that required to train for each job 'from scratch' or for job sequences unrelated in skills or knowledge. (p. 3)

Parkinson's (1985) study reveals that more than 15,000 students with TAFE qualifications entered higher education in Australia between 1980 and 1983. He advocates that provision be made for such students by formalising acceptance of TAFE qualifications for entry and credit status. This implies a need for curriculum co-operation between the various sectors of tertiary education, and he recommends that co-operative procedures be introduced into the TAFE curriculum process (p. 124).

A further study on cross-sectoral transfer from TAFE to Higher Education (McBeath et al., in preparation) is to be published by the TAFE National Centre. This looks specifically at bridging and conversion courses and other measures to facilitate the articulation of TAFE students to higher education. Details of 'bridging', 'link', 'feeder' and other conversion mechanisms are described.

## 2.4 ACCESS AND ENTRY LEVEL

The Kangan Committee (1974) called for the provision of unrestricted access to post school education in TAFE institutions, in essence the 'removal of barriers from and the ... encouragement of entry to technical and further education by all adults' (p. xxvi).

This does not imply, according to Hawke and Sweet (1983) 'that access to vocational courses should not depend mainly upon factors such as prior educational attainment or previous occupational experience'. They see the concept of 'open-access' including a 'focus upon methods of selecting students for courses' (p. 2).

In the economic climate of the 1980s, the need for selection appears a harsh reality. Hawke and Sweet (1983) point to 'the pressure for accountability' and 'competition between conflicting groups for ... resources'. They suggest a principle of compromise based on open access and the concept of 'recurrent education' recommended by the Kangan report.

> ... systems have an obligation to ensure that students are equally provided with educational opportunities of a nature and quality suited to their individual needs, and an obligation to ensure that students enrol in courses in which they have a reasonable chance of success. (p. 3)

There is a school of thought which removes such issues from the realm of curriculum development. Gullion (1973), for instance, feels that

> ... curriculum development does not require the establishment of entry requirements for students, because it deals with outcomes rather than the entire content of a program of instruction. (p. 30)

She, however, sees curriculum development in a narrower context than is usual in Australia. Practice in TAFE Authorities favours a wider context. Hawke and Sweet's principle concerns developers, and the curriculum decisions they seek from occupational data, both in the way courses are tailored to fit individual student needs and in the establishment of entry levels to courses, subjects (modules) and learning units. These in turn will affect course design decisions.

Selection to apprenticeship courses has in effect always been carried out by employers by virtue of the fact that they hire their own apprentices. The apprentice selection regulations that exist, are the province of the Training Commissions in each State. Occasionally, colleges offer further selection procedures to employers in special circumstances, but there is no obligation for employers to use them. Selection and access issues are important in relation to all other TAFE vocational courses, and it is in these contexts that developers need to make decisions.

Mageean (1985), however, makes a distinction between 'threshold' and 'entry' level selection procedures. Threshold requirements, as she distinguishes them, should be seen as 'the minimal requirements for performing in the course and on the job', and 'should be established to cope with the demands of the course and ... the job'. Developers should consider

> ... what mathematical processes, and at what level, are required; is physical strength required; what level of reading is necessary to follow class work and trade specifications; and what level of dexterity is essential? (p. 57)

'Threshold' considerations may include such factors as 'the ability to have passed a particular grade of mathematics and English'. Physical problems, 'such as epilepsy, deafness or colour blindness' may create safety risks to students in certain trades. 'Threshold' level measures should be designed to 'assess whether applicants possess the basic requirements to cope with the course and the job' (p. 63). Mageean (1985) recommends that 'entry' level measures should

> be designed which will enable selection to be made between applicants who possess the basic requirements (threshold level) in situations where there are more qualified applicants than there are available places. (p. 63)

She looks at a number of important selection issues such as student profiles, the cost effectiveness of trainability tests, the need for test evaluation and equity of access. Her discussion concludes with the following recommendations.

> That those involved in selection have available to them a pool of selection methods which ensure a range of characteristics are taken into account ...
>
> That feasibility studies be made before new selection methods are developed ...
>
> That Australian norms are compiled, and continually updated ...
>
> That selection methods be validated against both course results and later on-the-job performance, and that only ... valid predictors be included ...

> That all selection methods be carefully screened to ensure that they do not unfairly discriminate against any group.
>
> That all applicants for places on the course be selected by the same methods, to ensure there is no discrimination against any group. (pp. 64-5)

## 2.5 SELECTING TASKS FOR COURSES

An occupational analysis establishes what is done in the work place, and not necessarilly the details of what is required for a course. Having identified the components of the occupation, it is then necessary to decide which parts of the job need training and which parts of this training should be undertaken by TAFE colleges. Courses can be prepared only 'after tasks which do not require training have been eliminated and tasks which cannot be taught entirely in the training environment have been modified' (TAFE Vic., 1980, p. 38). Selection of tasks also

> enables managers of training to determine what training is appropriate and when it should occur; [in] a basic course; advanced course; special course; or on-the-job training. (Ellis, 1982, p. 2)

It is commonly assumed that in the case of courses where there is an on-the-job or work experience component, the employer can cater for some parts of the training better than TAFE colleges. This might happen when a task or a group of tasks is used frequently enough in the work place for there to be no need to include it in a course. It could also occur when expensive in-plant equipment is used, maintained and constantly updated for productive use in industry. Students would learn to use the equipment and gain the necessary practice in their work place and colleges would avoid having to equip and upgrade expensive and unproductive equipment centres.

Another factor in selecting task elements for college courses is the need, in trade courses specifically, to include 'general education; theoretical base; planned practical component (to relate the theory and trade practice); skills development; and general industrial experience' (Draft Glossary, 1983, p. 28). Time is also an important factor, as Sandery (1984) points out.

> It is unlikely that you will have enough course time available to include all the possible content items from your listing. Choices will have to be made based on some criterion.

Ellis (1982) discusses the criteria he used in rating task statements. He identified 'time spent' and 'involvement' scales for use in the occupational questionnaire and, from the responses, developed a coding system based on these categories:

| Time Spent Scale | Involvement Scale |
|---|---|
| 1 - very little | a - assist while receiving instruction on-the-job |
| 2 - below average | b - partly assist and partly do |
| 3 - average | c - do the task |
| 4 - above average | d - partly supervise and partly do |
| 5 - very much | e - supervise while giving on-the-job training (p. 4) |

From the codes (2c, 1d, 5c for example) given to each task he determined 'the proportion of the occupation performing the task', 'the frequency of task performance', and added 'the specialist's assessment of ... difficulty' to decide 'what training is appropriate and when it should occur' (p. 4). In a later work (1986) Ellis developed an algorithm based on importance, difficulty and frequency to determine whether a task should be included in the college based course or on the job (p. 2). He states that a task can be selected into a college course when it satisfies at least one of the following considerations.

> The task is critical to the actual overall effectiveness of the job or to occupational health or to safety or to welfare at work.
>
> The task is essential to other tasks, that is, the performance of the task is a prerequisite for another task(s) for which education and training is essential.

> The student cannot already perform the task.
>
> On-the-Job training cannot be achieved because of resource constraints.
>
> The task is not learnt by "transfer of training" from another task for which education and training will be given.
>
> The task is not performed by a sufficiently large proportion of workers in the industry to justify Off-the-Job education and training. (pp. 1, 3)

Sandery (1984) suggests some other possible ranking systems based on the importance of the tasks, but cautions that selecting tasks for inclusion in a course must also depend on the number of course hours available and the resources required (p. 27). She goes on to warn that

> the main thing to remember is that you want to use criteria which will generate **usable** information. There is no point in designing an elaborate information gathering chart or other instrument if you have no valid use for the data. (p. 29)

## 2.6 SEQUENCING AND STRUCTURING

Much of the literature on curriculum in TAFE deals with instructional techniques rather than actual curriculum issues. There is not yet a clear distinction, and curriculum developers find themselves asking 'how' as often as 'what'. The next four sections represent discussion on the former, but their inclusion is justified in that they are issues which curriculum developers in some States have considered very important. The differences in interpretation and emphasis are really the curriculum issue here.

The issues of sequencing learning units are different in vocational education from those we expect to find in schools-based curriculum development. Mager and Beach (1967) claim that the most important parameter for making decisions about sequencing is that of 'meaning for the student'. Here are their six guides to effective sequencing.

> **From general to specific** ... students generally find it more meaningful to move from the big picture to the details ... teach him [sic] how

something works first, and why it works that way later.

**Interest sequencing** ... start with a unit that contains information in which he [sic] is highly interested ... identify those units that are most interesting ... and ... seed these ... among the others.

**Logical sequencing** Sometimes the subject matter dictates that one unit be taught before another ... be careful! There isn't nearly as much reason for this kind of sequencing as instructors like to believe.

**Skill sequencing** If a man [sic] has to leave a course ... it is better to send him away with the ability to do a complete, if lesser, job than ... able only to talk about a job.

**Frequency sequencing** Teach him [sic] first those skills he will use most often; then sequence the rest ... in order of decreasing usefulness or importance.

**Total job practice** The students need a chance to practice the entire job as much as ... bits and pieces of the job. (pp. 59-61)

This appears to be a fairly comprehensive checklist for sequencing the material. Alternative methods of sequencing appear to be looking more at the nature of the performance objectives. Ammerman & Essex (1971) write

> Completed statements of ... objectives can be ordered sequentially within the duty categories in which their tasks originally were listed. This grouping retains the structure of the validated tasks. (p. 42)

They also suggest further possible groupings which include:

> those within common types of information inputs to each task;
>
> those within common types of job action as given by the action verb associated with each task;
>
> those with similar elements or items acted on (object);

> those with similar performance contexts or conditions;
>
> those with similar purposes served;
>
> those with similar equipment, machines, tools, or job aids;
>
> separately for core technical features of the work performed, as opposed to peripheral aspects. (pp. 42-3)

Sandery (1984) suggests sequencing of skills which are common to several trades before those which are specialised. She also recommends going back to the data on the importance of skills in the workplace.

> Another way to go about sequencing content is to refer to your chart used to rank content items. These can be grouped together in terms of their relationship to each other. Where the syllabus development task is really large, these groupings may represent a structure of courses. In this case, you want to sequence units of instruction within a course. (p. 34)

This is an important distinction. Courses and learning units within courses contain their own structure and the sequencing process applies to both.

Training courses which are more obviously discipline based are very often structured on the basis of traditional subject areas, but decisions on internal sequencing are still required. Knowles (1978), however, points to some interesting contradictions between traditional subject based sequencing and the needs of adult learners.

> According to this line of reasoning, it would make sense for first-year social work students to acquire basic foundational knowledge about the field - history, philosophy, public policy, institutional structure, etc. - for second-year students to focus on the theory and principles of social work practice; and for third-year students to concentrate on skill development and field experience.
>
> But this approach doesn't make any sense at all when working with mature people who are problem-centred in their orientation to learning. At best

> they would see the first two years to be drudgery that has to be endured in order to get to the 'real thing' in the third year. They would see as much more relevant a curriculum that is organized around the problem areas with which social work deals. (p. 58)

## 2.7 MODULES OR SUBJECTS

The Draft glossary of TAFE Terms (1983) defines a modular course as

> A discrete package of knowledge and/or skills representing the division of the curriculum into a number of integrated components. Modules are self contained and can be completed individually or in pre-defined sequences. (p. 18)

A subject is described as

> a subset or element of a course, and determined along traditional lines. For example, subjects in a trade course could be theory, practical, calculations and/or drawing. (p. 25)

A NSW Department of TAFE study (1984) states that modular training, as described in the literature, involves a particular approach to organising course structures and instruction.

> A course is divided into units of instruction i.e., modules, based on topics or capabilities whereby theory and practical aspects are integrated. The modules are self-contained and can be completed in various sequences with variable student progression. Instructional features normally incorporated in modular training systems are mastery, student pacing, performance objectives, and continuous assessment. Learning activities are typically presented to the student in a package of written and/or audio visual material. (p. 2)

In Victoria 'modular training' refers strictly to 'training based on the concept of building up the skills and knowledge required for job tasks, in independent units called learning units' (TAFE Vic., 1980, p. 95). There is also the rider that 'modules can usually be taken in a number of possible orders'.

The relationship between modules and subjects is demonstrated by the following example from a modular Plumbing course.

**MODULE 4.3 - INSTALLING A BASIN**

| THEORY | MATHS | DRAWING | PRACTICE |
|---|---|---|---|
| Types of basins<br>Fixing methods<br>Waste requirements<br>Water supply<br>Connection methods | Waste pipe grades<br>$\frac{\text{Distance}}{\text{Grade}} = \text{Fall}$ | Sketch of method of connection | Fix basin and connect waste pipe and water<br>Test installation |

(McDonald, 1982, p. 9)

Instead of studying Theory, Maths, Drawing and Practice as separate subjects, the student performs the single task of installing a basin, integrating the basic skills and knowledge from a number of subjects simultaneously. McDonald (1982) states that the major difference between modular and subject-based courses is that

> The latter allow the student to build up skills in various areas and knowledge in other areas over a long period of time. Only in the final stage of the course - or perhaps never in the training situation - is the student allowed to work on a 'project' which requires the integrated use of all skills and knowledge acquired. Modular courses, on the other hand, build up the ability to perform real-life tasks as a first aim and the acquisition of skills and knowledge tasks second place. (p. 10)

Clover and Goode (1982) reporting on the Perth Conference on Occupation Analysis, put forward a practical reason for curriculum developers choosing to use a modular design in a period of rapid technological and economic change.

> ... the restructuring of courses into modules ... has, as one of its advantages, the ability to revise one or more modules (based on a skill or group of skills) without having to revise the

whole course. This means that a course can be constantly up-dated by adding on modules or changing existing ones. (p. 17)

O'Donnell (1978) studied the issue in NSW with a view to deciding 'whether modules or subjects would be a better design on which to base new or revised courses'. Her paper identified the essential features of a module as being 'integrated, autonomous and performance orientated'. Subjects may have these characteristics also, but she found 'in practice they generally do not'. As a guide to curriculum developers, O'Donnell recommends modular design when

- there is a high practical content in the course;
- industrial development is rapid or predicted to become rapid in the near future;
- the course is held at small colleges and provision for variable pacing has to be made;
- the course attracts students with heterogeneous ages and levels of education;
- self-pacing is considered desirable in a course;
- flexibility is desirable and facilities are available for personalised instruction (instructor-paced or student-paced);
- the modular design will achieve the course aims;
- an existing subject-based course has a high attrition rate, and especially where previous attempts to reduce this rate have failed;
- equipment required for a course needs to be operated at several centres, is expensive, or scarce, or both.

Subject design, O'Donnell (1978) feels, should be followed when

- the course aim is knowledge, understanding or appreciation of concepts rather than the performance of some function;
- outside institutions conduct assessment for licensing purposes, and this assessment is subject-based;

- teachers will be required to manage large groups;
- pre-assembled packages for instruction are not readily available, or easily assembled;
- access to physical resources is limited;
- a course or part of a course consists of diverse subject areas, so that a single teacher will not have expertise in all areas;
- there is a high percentage of part-time teachers, and the module design would entail more out-of-class preparation work for teachers. (pp. 1-2)

In general, O'Donnell felt that vocational courses tend to have the sort of content which lent itself to modular design, but warns that the inclusion of uniform minimum standards require that assessment be planned at the same time as the material is written (p. 2). She feels also that teacher support should be sought by curriculum developers, when the introduction of module design requires a major change in approach or style of teaching (p. 2).

A later NSW study (1984) points out that very few of the courses which have a modular structure actually include all the components of a complete modular system. The study recommends that

> special effort should be directed towards those features of course design that allow students/employers some choice in attendance patterns module sequence and course specialisation. (p. 5)

## 2.8 MARKS AND MASTERY

> Each teacher begins ... with the expectation that about a third of his [sic] students will adequately learn what he has to teach. He expects about one third of his students to fail or to just "get by." Finally he expects another third to learn a good deal of what he has to teach, but not enough to be regarded as "good students". This set of expectations, supported by ... policies and practices in grading, becomes transmitted to the

> students through the grading procedures ... [and] ... is the most wasteful and destructive aspect of the present educational system. (Bloom, 1968, p. 1)

Thus Bloom sparked off the marks versus mastery assessment debate nearly two decades ago. The issues are still complex and vigorously discussed in TAFE circles.

The case for mastery learning, achievement and testing is well documented, although there is confusion in the terminology used in different States. It is based on the interaction of student aptitude, the quality of instruction and the amount of time available for learning, and premises that when the right balance between these variables is reached, 'the relationship between aptitude and achievement should approach zero' (Bloom, 1968, p. 3) and that 'virtually all students can and will learn well most of what they are taught'. (McDonald, 1982, p. 36).

It is argued that mastery learning in the sense of criterion-referenced testing, is particularly appropriate for TAFE, because vocational training is based on the philosophy that analysis of the job ... [determines] what is to be learned, and it is from analysis that the objectives are derived' (TAFE Vic., 1980, p. 35). There is no alternative to mastering the skills required on the job if the training is to be relevant. Broderick (1981) defines mastery learning as follows:

> The vocational learning task is divided into its elements and the student is progressively and objectively assessed by his performance in meeting the behavioural objectives of each element or sub-set of the task. By using a simple 'Go - No Go' criterion as the measure, the student is objectively assessed in a sequential manner, moreover, the student, by his achievement assesses his own performance. By achieving all the elemental task objectives, the student has achieved mastery of the whole learning task, which of itself is a part of a syllabus/subject/unit/module. (pp. xix and xx)

In practice, mastery learning implies the definition of objectives, as McDonald (1982) points out:

> ... the course content must be spelt out, usually by listing students' performance objectives. These objectives should:

i) state precisely what the student should be able to do;
ii) describe the conditions under which the student must show his competence; and
iii) state the standards of performance expected of the student. (p. 36)

The Victorian TAFE (1980) document on the instruction systems model summarises the arguments against the use of defined performance objectives as follows:

(a) they can be ambiguous and fail to communicate what they intend unless particular care is taken in their framing;

(b) a list of behaviours does not always represent adequately the structure of knowledge that is being presented (this is less so in vocational educational programs where behaviours are critical to effective job performance);

(c) the formal language of objectives can mitigate against their effective use. (p. 36)

The arguments in favour are given far more attention in the same document.

In considering the value of objectives, the following summaries of research findings may prove useful. Research in the areas, although scant, has shown:

(a) Objectives can be helpful for learning.

(b) Objectives have never been shown to inhibit learning.

As guides to teaching and learning:

(a) Objectives are useful if developed initially as starting points in formulating details of curriculum.

(b) Objectives, whether written in general or specific terms, do have certain things in common:

. they contain an action verb;

- they tell learners what they will be required to do.

(c) There is no significant evidence to support the contention that writing "Mager" type objectives (highly specific objectives, written in the traditional behavioural form) is any better than writing performance statements. What is of importance is the teacher's commitment to realising them. There is a need therefore to focus upon inducting teachers into the use of syllabi framed in an objective format.

(d) Children taught by teachers using objectives appear to benefit significantly more than children taught by teachers not given them. This advantage would appear to hold regardless of whether the teachers were trained in their use as guides to teaching, although training significantly increased learning. Such clearcut findings are unusual in educational research.

(e) Objectives provide students with clear goal statements for learning.

(f) One study (M. O. Schneiderwent) presents evidence that males appear to benefit more from objectives than females.

(g) Studies tend to show that giving learners the objectives prior to starting a program significantly increases learning in the traditional teaching situation. As well, providing learners with objectives reduces initial anxiety.

(h) Middle level ability learners benefit most from objectives.

(i) Research tends to show that tests based upon objectives are more effective than tests based upon content matter. (pp. 35-36)

The issue of norm-referenced and criterion-referenced testing is a further aspect of the same debate. Briefly McDonald (1982) summarises the arguments in the following definitions.

> A norm referenced test measures each student's achievement by identifying his [sic] performance in relation to the performance of others on the same test. The main use of a norm referenced test is to rank students, and to do this, test items are usually written to emphasize variances in student performance, i.e., to spread out the student marks. Norm referenced tests can validly be used in situations where a degree of selectivity is required, e.g., when deciding which students should be advised to pursue further studies, or when trying to identify the "best" student in the class.
>
> A criterion referenced test identifies an individual's status with respect to an established standard of performance. It is used to determine whether individuals possess a particular competence. Criterion referenced tests are especially useful for monitoring student progress in an individualized instruction system, and for diagnosing specific areas of weakness. More importantly, criterion referenced testing provides a way of building content meaning into test scores - it permits us to know what the student can do. (p. 38)

Arguments in favour of graded marks as distinct from 'achieved/not yet achieved' categories are not widespread in the literature, even though the principle survives strongly in the practice of thousands of TAFE instructors. There appears to be an underlying belief in instructors' professional integrity that enables the practice to survive on a widespread basis without the need for it to be vigorously defended in the literature. In fact, the tendency in some States has been for the trade areas to move towards mastery, behavioural objectives and criterion reference testing, while those courses based on cognitive and affective skills have retained a marking/grading system based on norm referenced tests. However, these tendencies differ widely in different TAFE Authorities, and there is no national pattern. McDonald (1982) perhaps can be allowed the last word, when he writes,

> Mastery learning ... will require ... changes and will incur ... costs (not merely financial). The question which must be fully investigated and answered is, "Are the benefits worth the costs?" (p. 38)

## 2.9 SELF-LEARNING

The Kangan Report (1974) recommended the dissemination of self learning facilities. Broderick (1981) describes the development of such facilities during the ensuing years.

> Self learning is another feature of TAFE ... In the intervening years since the ACOTAFE [Kangan] Committee first reported on TAFE in Australia, the growth of the learning resource centres in TAFE educational institutions has seen some advances, although in recent years the pace has slackened off ... due to TAFE Authorities economies. (pp. 24-5)

The literature on self-learning can be confusing. Some take it to refer only to self-paced learning, or to a particular formalised system of instruction. Others use the term synonymously with fleximode, individualised instruction and learner activity packages. In the foreword to Macdonald (1984), Hermann defines the characteristics of self-learning as:

> ... increasing the student involvement in the learning process, ... allowing students greater participation in determining the objectives and content of the course, ... learning strategies and media, ... the pace of learning and the specific techniques to be used ... (p. iii)

Pearson (1981) suggests a model which refines it further

> ... what usefully distinguished one individualised instruction program from another is not the media used, not whether students learn at their own pace but rather who controls ... pace, objectives, strategies and assessment in a given program, to what extent. (p. 15)

Macdonald (1984) sees this as 'a particularly useful framework' in which to consider individualised learning in TAFE 'because the nature of many occupational programs ... means that total individualised learning is not always possible or desirable.' The model, she says, enables a decision to be taken as to the degree of individualisation appropriate on each of the four dimensions (p. vii).

She outlines five methods of implementing self-learning: fleximode; providing for student choice at the subject level; self-paced learning in the classroom; use of audio-tape; and assisted independent learning. She recognises that there is wide scope for innovation and flexibility in the degree of individualisation, and that decisions on the four dimensions mentioned by Pearson (1981) can be taken separately or all together as appropriate to the situation.

She also stresses that if curriculum materials are to provide good interaction between teachers and students, the decision to include self-learning in a new course must be made early in the curriculum process.

An interim report by Ansell (1984) on a national survey of individualised instruction, identifies the following arguments for and against the various self-learning techniques.

Pros

Less stress on students.

"Better" results.

More confidence in students.

Students more motivated.

Industry more satisfied with end result.

Increased (and beneficial) "hands on" experience.

More staff satisfaction.

Industry happier with students' attitude.

Staff could see less work in the long run - more pastoral/counselling role.

Provision for diagnosis of individual student needs/problems.

Student-based more meaningful.

Different/better relationship with students.

More flexible approach to class sizes, (i.e. can be mixture of levels).

Improved remediation.

Decreased students drop out.

Student takes responsibility for own learning and progress.

Flexibility of programme.

Cons

Time consuming for staff re preparation, assignment and assessment.

Staff stress/fatigue due to diversity of student involvement.

Insufficient time allocation for development of courses/materials, etc.

Insufficient (or no) staff ...

Resistance from staff to "new methods"; also fear.

Fear of redundancy.

General lack of staff awareness/support.

Staff concern that self-pacing doesn't relate to pressures in the "real world".

Keeping abreast of industry, especially as regards equipment for meaningful live work.

Amount of curriculum development required.

Constraints of time, resources, materials, buildings, staff. (pp. 21-2)

Individualised instruction, according to Pearson (1981) is advocated because it is learner centred. It is claimed to

- better meet individual student needs
- allow for individual characteristics and learning styles
- improve motivation
- enable the student to be independent
- change the teacher's role from information giver to manager, guide resource and tutor. (p. 44)

From her review of individualised instruction and self-paced/learning Pearson concludes:

> ... whether all, some or none of the above are features of any Individualised Instruction programme will depend on how the programme is developed and implemented. The appropriateness of the decisions made about organisation and presentation of context, assessment and management will determine whether a programme meets its aims, the needs of the students and is educationally effective. (p. 44)

## 3. RESEARCH DIRECTIONS

### 3.1 THE SCOPE OF THIS PROJECT

In the broadest possible terms, the curriculum development process consists of four, not necessarily linear, stages: needs assessment, design and development, implementation and evaluation.

This project will be limited to what could be regarded as the first part of the second stage, the content and structure decision-making stage of design and development.

The first stage, data collection and analysis, or needs assessment, is being researched by Anderson and Jones as a TAFE National Centre commissioned project on data gathering by group process methods and research workshops. The researchers propose to describe the various occupational analysis procedures used by TAFE Authorities, and to discuss the issues involved in producing reliable and valid data on which to base curriculum decisions. Implementation issues in TAFE curriculum have likewise been explored by Kennedy, Williamson and Patterson and the results of their work are due for publication by the TAFE National Centre this year, as Curriculum implementation in TAFE in Western Australia: Two case studies. Another related area, curriculum resources and materials production, has also been investigated and has since been published (McBeath, 1985). While materials design issues, in the sense of teaching and learning options, rightly fall within the scope of curriculum design and development, the latter project obviated the usefulness of including those issues in this project.

These three projects, therefore, define the starting and stopping points of the issues to be covered in this project. They also justify the very narrow context in which the questions of translating data into curriculum are viewed here.

The issues will be confined to those relevant to TAFE vocational training courses, such as pre-vocational, apprenticeship and certificate courses at various levels. It will not include curriculum development issues affecting personal enrichment, access, further education or leisure courses. These are not normally development formally by

curriculum developers and probably call more on general principles of adult education than on occupational data collection.

### 3.2 THE AIM OF THIS PROJECT

In Chapter 2 some educational issues involved in TAFE curriculum development were identified and their importance justified by reference to the current literature. It is significant, however, that the literature includes little discussion of these issues from the point of view of curriculum decision-making, nor to any great extent, of the factors which will influence the way the issues are adapted to and incorporated in the structure and content of new curriculum projects.

The suggestion has already been made in this report that decisions on curriculum appear to be based on intuition or professional judgement. If this is so, how can we ensure that this intuition is trustworthy. How can professional judgement be developed? What are the ingredients? How can new curriculum developers begin before they have developed the intuition and professional judgement that, it is claimed, come from experience? In an area where procedures in most TAFE Authorities are clearly and tightly defined, and the educational issues are at least partly documented, is it possible that a whole series of questions has not yet been dealt with? Is it possible that some very important questions have not yet been asked, let alone answered, in the area of TAFE curriculum development. The object of this study was to find out.

It was necessary first to establish whether the key educational questions, or similar ones, were being satisfactorily addressed and answered. Can it be assumed that curriculum developers know what options are open to them? Are they familiar with current thought and development in the field of TAFE curriculum in Australia? Are they educated in TAFE curriculum issues?

Second, the research needed to discover what factors consciously and subconsciously influence decision-making. This proved to be more difficult. People can answer questions about conscious influences, but the subconscious ones can only be estimated or partly guessed at. One of the reasons why TAFE curriculum literature hasn't dealt adequately with the problem of decision-making is no doubt the belief that a number of important influences lie beneath the surface and can't be readily observed.

Third, the project set out to discover whether, at a time of increasing economic accountability, informed intuition and professional judgement could remain the basis of decision-making, or whether guidelines or considerations could be established to make the process more efficient and effective. This was to be attempted on the basis of the findings of the two previous questions.

Experienced curriculum developers had to be asked what issues they considered, on what data they based their decisions, and how they justified these decisions. They also had to be asked about the decisions themselves, in particular which were the most difficult, the most significant, the most successful and least successful and whether they would do things differently if they were to tackle the problem again.

It was hoped to extrapolate from this information guidelines or principles to assist curriculum developers in their decision-making function. It was not envisaged that a procedural model or a check-list of procedures would be developed, as procedure is already well catered for in the literature available to TAFE Authorities. Rather it was hoped that a set of principles could be identified which might free curriculum developers from the restriction of narrow procedural paths and set answers, and give them a broad and informed context in which they could make decisions realistically and with confidence.

### 3.3 INFORMATION NEEDED FROM THE DATA

One of the problems of the curriculum process is the fuzzy area between occupational data collection and the designing of the training programme. The existence of occupational data does not mean that the data have been analysed, or even interpreted. Often the curriculum developer has to do quite a lot of work on the data before important curriculum questions can be answered.

At best, the data consist of a definitive list of job-derived performance objectives indicating the importance and frequency of their occurrence in a specified job area. Sometimes the data consist of a computer printout of the significance and relevance of hundreds of tasks and skills. Sometimes they are more like duty statements or job descriptions including tasks but not skills. Sometimes the information has been derived from the widest range of staff possible in the occupational area, including the cleaner and

the managing director; at other times it is no more than a report on several unstructured interviews with employers. Sometimes it is an interpretative course evaluation, or an audit of training needs based on teachers' comments. Occupational data certainly doesn't always reach curriculum developers as a neatly analysed and annotated package providing all the answers they need to begin writing course objectives. They are looking for quite a lot of information and more often than not don't find it.

Before any curriculum decisions can be made, developers will have to look carefully and critically at the available data. These are the sort of questions which will come to mind:

- Does the data indicate a need for a new training course? Is curriculum development necessary?

- What is the currency of the identified tasks and skills? Are they changing? Will they change?

- How far does the occupational analysis go? Does it separate essential skills from desirable ones? Does it indicate which ones will be most readily learned in the work place? Does it distinguish between 'common knowledge' and skills which have to be taught and practised? Does it indicate the knowledge required, or the theoretical base on which practice must be built.

- Is the data comprehensive? Does it focus only on manipulative or operational skills? What else is needed? Does it subdivide tasks into skills, knowledge and attitudes? Is it in the form of general or specific objectives?

- Is the type of training evident in the information? Does it predetermine whether the course will be competency-based or subject discipline based? Does it indicate standards?

- Using the occupational data, can curriculum developers define objectives, clarify learning priorities, estimate instruction time and supplies, as Pratt (1980) recommends? Can they produce a clear description of the programme, the scope and sequence of its courses, course content, prerequisite and requisite requirements, as Ripley and Arredondo (1980) suggest? On what basis can they eliminate tasks which do not require training, and modify tasks which cannot be taught in the training environment, as the Victorian manual directs?

Sometimes the occupational survey will include information about course level and student market. Curriculum developers will need to know the answers to the following questions.

- What sort of course is to be developed - trade, technician, certificate or vocational short course? Why? Is it possible to break out of these traditional course structures and develop something new? What are the accreditation/registration implications and constraints?

- Is there an existing course in the chosen area? Does the survey include an evaluation of it? Is it still relevant? Can some of it be retained? Can some of it be modified?

- Are there existing related courses? Will the relationship between courses be important? In what way? What does the survey indicate about job relationships in the occupational area?

- Does the survey project the number of employees to be absorbed into the occupational area in the near future? The next decade? The next generation?

- What is known of the potential student body? How old are they? What educational or work experience have they had? Will selection occur? Will the number and distribution of students determine the number of centres running the course? What alternatives exist?

- Is there information on the reason why students have taken this course or related courses in the past? Are they likely to complete the course? Will some prefer to select individual subjects/modules? Should there be provision for this in the new course?

Before proceeding with curriculum development, it is necessary to ascertain whether the course is feasible, and that it will be used. The data may include information from unions, professional bodies and government agencies. It is certainly necessary to know whether it is acceptable to TAFE Authorities, funding bodies and training institutions.

- What constraints exist in industry and in the training Authority? Finance? Time? Staff? Government/local regulations? Space? Equipment?

- Which organisations will be involved in accreditation? What are their views of the projected course? Can their opinions be incorporated or modified?

- What do vocational instructors in the area think about it? What are their views based on? How can their views be incorporated or modified? What will their focus be? What are their boundaries?

- What is going on in other countries in this area of training?

- What resources will be required? How many of those exist? Will the cost of new resources be met?

Many of these questions are referred to in the literature on occupational data collection and analysis. Developers should have information on all these issues before the design stage can begin; however, many projects begin with far less than this and developers must often rely on little more than professional judgement to make correct decisions.

### 3.4 TRANSLATING DATA INTO CURRICULUM

When the information outlined above is to hand, what are the curriculum questions to be addressed? How can the curriculum developer translate it into a course which will be seen as valid to employers and unions, educationally justifiable to instructors and institutions, and realistic to the aspirations and expectations of the students?

From the data available, developers must determine the course content and structure, its length, level and format. They must adapt it to fit in with existing financial, staffing and accreditation constraints. In the process they must retain the highest possible degree of educational integrity, while catering realistically to the harsher demands of commerce and industry. Furthermore, the present and future needs of the students must retain paramount.

Curriculum developers must have some sort of framework within which to develop the course. Ascertaining the course structure is not necessarily the first step. Content or structure can be decided in any order, or even simultaneously. However when a number of people are working together on a course team, it is probably more important that they agree early on the structure of the course. The questions which follow are those which need to be answered to decide on course structure.

- What is the level of the course? What qualification will be offered on its successful completion? Do the occupational data contain the information upon which this decision can be based?

- What is the scope of the course? How long should it be? Within what time structure should it be offered? Should it cater for full-time and part-time students? Why? Do the data indicate the answers?

- Will every student take the whole course? Should there be a core plus specialised options? Should it be a 'smorgasbord' of equally weighted units or subjects? Why? What evidence is there in the data for the decision?

- Should it be subject-based or modular in format? On what basis should this decision be made? Do the data suggest the answer?

- How should it be structured? Does it fit easily into a pattern of learning units or discipline based subjects? If not, how should it best be divided? Can some tasks be included or incorporated in other larger ones? Do the data suggest how the material should be divided?

- How should it be sequenced? What can adult learning theory suggest to help with sequencing? How far does the nature of the occupation determine sequence? What does the data indicate?

- Should the course, or parts of it, allow for self-paced learning? What data justify such a choice?

The objectives produced by the occupational survey, if they indeed are produced by it, are job or terminal performance objectives. The developer selects those which will be included in the course, on the basis of the criteria identified in Section 3.3. It is necessary however, to reformulate these in terms of student performance objectives, because it is on these that the course will take shape. In formulating these objectives, there are further questions to be answered.

- How can the objectives best include the necessary theoretical base, practical work, skills development and general industrial experience? Should attitudes be included? Should the objectives be detailed as specific or behavioural objectives, or will general course and subject objectives be sufficient? What data are available to justify these decisions?

- Are there processes identifiable as containing and leading to the outcomes? Should these processes become the objectives, or exist side by side with behavioural outcomes?

- What is the best way to test each objective? How can the tests be matched best to the requirements of the objectives. Do all objectives have to be tested? Can these decisions be justified from the data?

- On what basis can standards be built into performance? Should the standards become more demanding as the course progresses? On what basis can standards be set? What evidence is there in the data?

- Under what conditions will the objectives be assessed? Will simulation be used? If simulated conditions are not identical with those required for performance on the job, what justification is there for the difference? What does the data offer?

- How should each performance be assessed? How much relevance is there in using a mark or grading system? Would mastery, in the sense of 'achieved' or 'yet to be achieved' be more useful? Can marks be used to denote mastery? How many attempts will be permitted? What happens when students fail all attempts? Should they take a pre-test to assess their own readiness for the assessable performance? What indicators are there in the data?

- Should a testing timetable be built into the subject/module or course? Should students be able to present for testing when they feel ready? If not, what period of time will elapse before the next attempt is permitted? What evidence is there in the data?

- Who is going to write the objectives and the tests? How closely involved should instructors be in this process? Is there relevant information in the data?

Only when these questions have been answered and the objective-testing framework written, will the developer be ready to face the issues of writing the syllabus document. With the completion of the syllabus document, the design and development stage is half complete. The learning materials have yet to be chosen, designed and produced, but this project defines its cut-off point here where the curriculum decisions have been made.

## 3.5 RESEARCH PROCEDURE

An Advisory Committee was established in the early stages of this project. Its members consisted of people involved in curriculum research and development in three TAFE Authorities. Their role was to read and comment on the draft document at various stages and help stimulate the flow and structuring of new ideas. They met once at the TAFE National Centre for Research and Development, to discuss the content and structure and research methodology, and to add their perspectives to the issues which were evolving. It was decided at this meeting that the project should tap three sources of curriculum expertise in Australia - TAFE curriculum literature, practising curriculum developers and selected curriculum projects as case studies.

A network of contact people, all currently engaged in practical curriculum development, was established during the first three months of the project. The role of these curriculum developers was of a less formal nature, consisting mainly of discussing various issues as they arose and providing examples from their day to day experiences when required.

Close contact was also kept with those researchers working on other TAFE National Centre commissioned projects researching occupational data collection, resources development and curriculum implementation (see Section 3.1, p. 39). A symposium was organised at which the researchers concerned presented preliminary research summaries of three of these projects under the title of 'TAFE curriculum issues,' at the AARE conference in Perth in 1984.

The case study method was intended to explore in more depth what was going on in TAFE curriculum development across Australia. The case studies were to range across a number of different kinds of curriculm projects, representing pre-vocational, trade and certificate level courses. They were to include also both traditional and new courses developed over the last few years. They were to be investigated by open-ended interviews with the curriculum developers who managed the curriculum decision-making, or with a key person in the curriculum team. The researcher was a member of the task forces of two national curriculum projects during the time of the investigation, and it was decided to include these as case studies also, and to study them by participant observation methods.

The two methods of investigation produced significantly different kinds of results. The interviews produced descriptions of curriculum decisions in retrospect, biased

by the interviewees' memories of the processes and the final decisions made. In the case of the older projects, responses were further distorted by implementation and any rewriting which had occurred since. This was not necessarily a disadvantage, highlighting as it did the fact that curriculum development is a dynamic ongoing process of change, as well as the fact that implementation and formative evaluation are integral parts of the process, although this project does not deal with them. Another factor of the interview approach was that the respondents' recall of the influences on the decision-making process was often blunted by the decisions themselves, except for the more dramatic or difficult events leading up to them. For a project this size, this was also of some advantage in that it ensured that a certain amount of editing had already occurred in the minds of the respondents, and only the most significant events were described. The older the project, (the earliest began in 1976) the more serious this editing had become, and the hoped for gains lost some of their effect.

Participant observation methods produced almost the opposite effect. The researcher was in both cases a working member of the group and was seen by the other participants more in the role of curriculum developer than as an observer or researcher. Hence she was involved in the many levels of interpersonal exchanges, large and small, and aware of the constant rise and fall of pressures and emotional levels, as well as the more important factors leading to the major decisions. Within that context, the decisions tended to become less important than the process, and from that point of view gave a set of insights which filled in the gaps left from the interviews. However, the reseacher also was relying on memory after the event in collating the case study material, as no formal recording instrument was used during the meetings.

An open-ended interview schedule was developed with the aim of exploring the perspectives of the curriculum developers on the selected project. By giving little more than working headings, the questions aimed to avoid putting preconceived answers into their minds. The schedule was printed and sent to interviewees in advance, giving them time to think about the issues. Among those who had prepared for the interview, there was a tendency for greater digression and jumping from one part of the schedule to another. This produced valuable spontaneous information, but made for a lack of structure which made the responses much harder to analyse.

The interview schedule was developed along the lines of the issues discussed earlier in this chapter, and is included as Appendix A.

The sample of case studies was chosen on a number of factors. The researcher combined the interviewing timetable with interstate visits related to other business, which influenced the selection of States visited namely, Queensland, New South Wales, Victoria and Western Australia. The selection of projects in these States was made with the advice and assistance of the relevant Curriculum Projects Steering Group member. Projects were chosen partly because they had been interesting, important or challenging, partly on the basis of who would be available for interview at the time, and partly to ensure that a balance of different kinds of curricula would be achieved.

One interview was conducted by telephone and thirteen by face-to-face discussion, in most cases, in the respondents' work places. They were tape-recorded to ensure accuracy and as the analysis didn't take place until a year later, this proved a wise decision. Each interview lasted between one and one-and-a-half hours. The interview tapes were analysed by interpretative methods, and a draft of the case study chapters sent to the interviewees for comment on accuracy and omissions. Their comments were noted and assimilated into the final project.

Members of the advisory committee did not meet again, but continued to read and comment on the draft into its final stages.

## 4. THE CASE STUDIES: COLLECTING THE DATA

### 4.1 THE SURVEY

An analysis was made of sixteen curriculum development projects (Table 4.1) across Australia. They represented a cross-sample of old and new courses in certificate (TAFE stream codes 3200 to 3400), apprenticeship and pre-vocational levels, as well as being in various stages of development and implementation. Fourteen projects were State initiatives and two were national curriculum projects (NCP), one convened in Victoria and the other in South Australia.

**TABLE 4.1**

**CURRICULUM PROJECTS SURVEYED**

| | | | |
|---|---|---|---|
| 1. | Plumbing | apprenticeship | Vic |
| 2. | Plumbing | apprenticeship | NSW |
| 3. | Fitting & Machining | apprenticeship | NSW |
| 4. | Spray Painting | apprenticeship | WA |
| 5. | Beauty Culture | apprenticeship | NSW |
| 6. | Horticulture | National training courses for<br>. Gardener<br>. Greenkeeper<br>. Landscape Gardener<br>. Nursery Person | NCP-Vic |
| 7. | Engineering/ Construction | pre-vocational (1 yr) | Qld |
| 8. | Industrial Skills | pre-vocational (2 yrs) | NSW |
| 9. | Business Studies | pre-vocational (1 yr) | Qld |
| 10. | Office & Secretarial Studies | certificate (1 yr) | Vic |
| 11. | Secretarial Studies | certificate (1 yr) | NSW |
| 12. | Community Development for Aborigines & Islanders | certificate (3 yrs) | Qld |
| 13. | Hospitality | certificate (2 yrs) | WA |
| 14. | Fashion Design/ Production | diploma (3 yrs) | WA |
| 15. | Photography | certificate (4 yrs PT) | NSW |
| 16. | Trading Standards | certificate (2 yrs) | NCP-SA |

A key person in the management of each of the fourteen State projects was interviewed. Eight of these were curriculum development officers employed as such by the relevant TAFE Authority, and whose experience consisted of convening and managing course reviews and development in diverse areas. The other six were content specialists or senior teachers, seconded by their respective TAFE Authority for the period of the project, given curriculum training and guidance and appointed to co-ordinate development in their own specialist area. Five of the six NSW interviewees, and all of those from Queensland, were curriculum officers. All three Western Australian project managers interviewed were teachers. While it is not necessarily the norm in Victoria, the two persons interviewed there were content specialists, who both worked with curriculum developers and other teachers as part of a team.

The two national curriculum projects (NCP) were studied by participant observation methods. The observer researcher had curriculum development expertise and this role no doubt influenced the interpretation of the curriculum process. The convenor of the Horticulture project was a content specialist, while the project manager of Trading Standards was a curriculum developer. These are included in Table 4.2 as the main contacts outside the task force meetings.

**TABLE 4.2**

**INTERVIEWEES' ROLES IN PROJECTS**

| | Content specialist | Curriculum officer | Total |
|---|---|---|---|
| NSW | 1 | 5 | 6 |
| Victoria | 2 | | 2 |
| Queensland | | 3 | 3 |
| Western Australia | 3 | | 3 |
| NCP | 1 | 1 | 2 |
| Total | 7 | 9 | 16 |

The role the individual interviewees held in the project is assumed to have influenced their interpretation of the questions and their responses, although all projects had both curriculum and subject specialist expertise available to them during development.

## 4.2 OCCUPATIONAL DATA COLLECTION

In all but one curriculum project an industry survey of some kind was conducted. The Industrial Skills project was somewhat different from the others in that it consisted of an experiment in a cross-disciplinary, broad-based industrial skills course at the pre-vocational level. It was a rapidly developed course intended to address short-term problems caused by the economic recession in 1982, when employers were not taking on apprentices and some trade teachers faced temporary underemployment. Course development was funded by a special Commonwealth grant and supported by NSW TAFE in an attempt to find training alternatives to meet the needs of students and teachers. Course content was determined by tapping the expertise of teachers across the engineering trades, and offering a two-year full-time course for students who did not gain admission to apprenticeship or pre-apprenticeship programmes.

Occupational surveys carried out as part of the other fifteen projects ranged through full occupational and task data collection and analysis; questionnaires to employers, employees and teachers, students and past students; face to face interviews with employers and employees; and the secondment of a field practitioner to undertake a needs analysis. The Beauty Culture occupational survey included attendance at a trade fair and an equipment demonstration and the despatch of a senior teacher to Europe and the United States to observe and study similar training there. Overseas occupational analyses were consulted by the NSW Plumbing project team and at least one of the secretarial projects. Several interviewees referred to using data collected in other States, and modifying and adapting it in consultation with local industry.

The NSW Secretarial project used the most diverse methods of occupational data collection, including a questionnaire sent to a selected sample of 1000 businesses; face to face interviews of employers and employees from 46 businesses; questionnaires to teachers and 500 ex-students; a newspaper advertisement calling for submissions from the general public, backed by editorial coverage in a range of journals, newspapers and magazines; a telephone survey of equipment and computer manufacturers; and a literature review. The interviewee stated that there were more data than needed. 'It all pointed in the same direction', she said. 'It all confirmed the growing importance of technology in the modern office, and the need for computer-based skills in training.'

The Horticulture national curriculum team used a detailed task list prepared earlier by the Victorian TAFE Board. Representatives on the team took the task list back to their respective States and Territories and obtained comments and response from representatives of local industry. In most cases this was done in committee, using discussion and consensus decision- making techniques. The Victorian Plumbing team used a NSW occupational analysis in the same way. The Western Australian Spray Painting curriculum developer used an analysis of the Automotive industry done in Victoria, and based a detailed local survey on that.

The most difficult needs analysis was probably that of the Beauty Culture project. This was to be a new course, requested variously by the Department of Consumer Affairs, the Commissioner of Apprenticeships and a diversified industry seeking to improve its professional credibility. The industry had requested Diploma level training, outside the realm of TAFE level courses, but the TAFE-managed task analysis indicated that training was needed, at least initially, at the operative level. The industry, furthermore, was deeply divided in itself, represented by two separate associations, a vast range in the standards of professional training, a number of dubious privately run training schools, strong commercial interests and ambitions, and the taint in some sections of scandal, malpractice and consumer discontent. It was inevitable that the industry sample with the most influence on the occupational data was eventually narrowed down to those people whose values and standards were most acceptable to TAFE.

### 4.3 SPECIFIC INDUSTRIAL NEEDS

In the majority of cases the curriculum project was initiated as part of a regular course review. It is widely regarded as desirable that courses be updated every five years, and some TAFE Authorities make a real attempt to keep to this ideal. In NSW, the Secretarial Studies curriculum project was part of a major course review, with forty courses included in the updating and revision process. This would help explain the size of the occupational data collection referred to earlier.

The Fashion Design/Production course initiative may have come largely from lecturers, partly in response to the transfer of Fashion Department to new purpose-built premises in 1980.

The initiative for the Trading Standards Certificate came from the National Standards Commission. The only TAFE training in this area was an old course run by the Victorian TAFE Off-campus Network, while Trade Measurement inspectors in Queensland studied subjects from the Institute of Technology's Associate Diploma in Mechanical Engineering. Training in other states was conducted on the job by the relevant State Departments, where many of the senior officers had been recruited from the United Kingdom. There had been growing concern in the industry that something had to be done about training, and a direct approach was made to the Curriculum Projects Steering Group to set up a curriculum development project.

Industry demand for the Beauty Culture course has already been mentioned. In the Plumbing and Spray Painting areas, mention was made of 'TAFE training lagging behind industry demand' and curriculum development initiative came jointly from the Industrial Training Commissions and the TAFE Authorities.

The best example of industry demand for updating existing training was the Western Australian Hospitality project. In ten years Perth's fifteen restaurants had increased to 1000; six major hotels and a casino had been built. The TAFE Food and Catering School had increased from one department to six, and student numbers had increased a thousand per cent! Tourism was burgeoning due, in part, to the America's Cup scheduled for 1987. It was an appropriate time for a thorough new look at the old courses.

Data from two of the projects in traditional apprenticeship areas indicated that the new course needed tighter cohesion of the theoretical and practical components. The Search Conference technique, used in data collection for Spray Painting, brought to light the need for apprentices to look after the workshop in the absence of the manager, and hence the need for communication and telephone skills in their training. In the Plumbing courses, data collection identified the increasing use of new materials such as polyvinyl chloride (PVC), and new techniques which were developing with changes in society.

There was an awareness at the data collection stage of the need to assess the changing importance of new technologies when courses were being revised or redeveloped. The Fitting & Machining analysis pointed to the need for fluid power and numerical control technology to be incorporated in trade level training. The three secretarial curriculum development

teams were aware of the swing to word processors and micro-computers in modern offices. The NSW interviewee said that part of the occupational data collection questionnaire required information on type of duty, equipment used and tasks performed. As this questionnaire went to a thousand businesses and was supported by the findings of industry visits, information about all equipment used for all duties in the modern office, and the way it was used was obtained. The Queensland and Victorian Secretarial researchers used the DACUM method to gather similar data, and their findings coincided very closely.

The Search Conference method and interviews with industry used for the Hospitality course, revealed the need for enormous changes in electronic and computer technology training, especially in the areas of reception, accounting, marketing and management.

The Fashion Design/Production occupational analysis brought to light an interesting dilemma which can occur when the local industry is comparatively small. Workshops and businesses which don't use computer technology are not likely to identify the need for it in training. It was only knowledge of trends in the larger eastern cities which prompted input from TAFE teachers to recommend computer use for fashion design. The course was being developed for at least five years' use, and it was felt that within that period local businesses would require knowledge of computer-aided design. The Search Conference method used by the Fashion course developers also revealed unexpected pockets of the industry, such as cottage crafts (spinning, weaving and knitting), embroidery and fashion accessories, all of which needed to be catered for in some way in the new course.

In some cases the need for new course components in Communications and Business Practices - now fairly standard in most new courses - came from the occupational surveys; in others their inclusion was encouraged by TAFE Authority policy.

### 4.4 EXISTING COURSE DATA

Four of the projects reviewed were in completely new areas, but the developers all made sure they had a clear idea of the potential student market.

The Beauty Culture course was developed for the operative level of beauticians and therapists, who were then being trained in private schools. They were easily identified as mostly female, city-based, young school leavers. It is interesting that the NSW student market research revealed different patterns from a similar project under way in Victoria about the same time. In Victoria the potential students were older and many had completed Hairdressing or similar qualifications.

The Trading Standards Certificate course answered a need for first level formalised training for approximately sixty Trade Measurement inspectors working for State and Local Government throughout Australia. They were male, mature aged and working in both city and country centres.

The Community Development for Aboriginal and Islanders course was aimed at a previously hidden client group of Aboriginal people, mostly urban, mature-aged and male, with experience in a trade, trade teaching, or field work for Government Departments. The prospective students were working in TAFE as TAFE Aboriginal and Islander Field Officers. There had been a consistent drain from this group as they were readily employed interstate, in head office or government departments. The training course was intended to give them formal qualifications for their field work, and preparation for entry to TAFE teaching if eligible.

The fourth new course, Industrial Skills, was aimed at school leavers who, in less stringent economic times, would normally have obtained apprenticeship or pre-apprenticeship training. They were city-based and mostly male.

In the other twelve projects the potential student market was well known from previous or similar courses, and in several cases sample groups of students and ex-students were contacted by questionnaire or interview, for input into the occupational data.

The structure of similar or previous courses was not considered particularly important to the majority of those interviewed. 'We put the old course in the bin,' said one, 'and started from scratch.' 'The old course was a typical "desk job", and we wanted to get away from old entrenched attitudes', claimed another. The overall impression gained from all but one of the interviews, is that the developers felt they had a mandate to develop courses outside existing patterns, to experiment with length, attendance patterns and subject choice, as long as their decisions were realistic and relevant. The one admitted exception was Photography.

However, the strictures of traditional practice were probably more limiting than most of them realised.

The input of instructors to the data collection process varied widely. In one case, teachers were consciously kept out of the curriculum process until the industry had finalised the syllabus content to its own satisfaction. It was felt that teachers' entrenched attitudes would be a reactionary influence. In the majority of cases, teachers and instructors were included at all levels of decision-making, partly to ensure that staff development was kept parallel with new requirements and partly to provide the materials writing function, trialling and successful implementation. The concept of 'shared ownership' was referred to several times. Where the curriculum developer was a teacher, the tendency to involve other teachers was more apparent. The Trading Standards national curriculum project dealt with a completely new course, and there were no TAFE teachers with specific content expertise.

### 4.5 CONTEXT DATA

There appeared to be little consistency between the decision-making processes used. Two of the projects in Queensland used DACUM, and those in Western Australia used Search Conference techniques. Victoria used the Scalar method of the Systems Model of task analysis and DACUM. Practitioners in each State borrowed and learned from each other, sometimes without fully realising it. In some cases a single developer held responsibility for the project, holding meetings, contracting various tasks, communicating with teachers and industry representatives, supervising workshops and writing teams as necessary. Sometimes a development team or task force was set up at the beginning and remained the organisational and motivational power for the life of the project. Sometimes an earlier industry dominated group gave way to a teacher dominated group as the project progressed. The Engineering/Construction project used a complex ongoing committee structure, tapping into the State Training Commission, industry, TAFE Curriculum Branch and college-based teachers. Twenty-five trade-based working parties were involved in producing the relevant parts of the course. The two national curriculum projects were directed by a task force drawn from a number of States. The Horticulture task force had representatives from all eight States and Territories and, for the first year, from the TAFE National Centre. Trading Standards started out with similar representation, but was later reduced to a six-member working party from TAFE and industry.

Each project had a set procedure for checking at various stages of development with official TAFE committees or review boards. Funding and accreditation checking procedures were followed according to the practice of each TAFE Authority. In most cases, the course was due for review or a commitment to develop a new course had been made by the Authority, funding and support was provided, and the process of accountability flowed on from that.

The one notable exception was the Trading Standards NCP. Its story is so unusual that it deserves to be told. Curriculum and/or industry representatives from all States and Territories met first in Adelaide in 1984, answerable to the Curriculum Projects Steering Group. This meeting identified course objectives and content according to industrial requirements, and a smaller working party finalised the syllabus document two or three months later. The course was to be developed in distance education mode for national use, and the team regarded its work as far from finished. The Curriculum Projects Steering Group however regarded the project as completed, according to the original submission. Normally a new NCP syllabus would at this stage be taken back to the individual TAFE Authorities to develop the course to suit their own local needs and conditions. With no more than a handful of potential students in each State, no TAFE Authority was prepared to do this, and the course was to all intents and purposes shelved.

Nonetheless the industry refused to be deterred. Through the personal commitment of individuals from the National Standards Commission, the Australian Institute of Trading Standards, the Consumer Affairs Department, the South Australian and Victorian TAFE Authorities and the TAFE National Centre, the working party struggled on, unfunded and unrecognised. Eventually the Heads of TAFE External Studies recognised the problem and further assistance was donated by Western Australia's Technical Extension Service and the Victorian TAFE Off-Campus Network. The course is now in operation and claims to be Australia's first truly national course. The first graduates are expected by the end of 1988.

In normal circumstances the project would have died. The determination of a few kept it alive without the normal procedural and support systems, virtually unacknowledged, and without financial or procedural accountability to anyone.

Apart from providing procedural and support structures, each TAFE Authority has a set of policy guidelines for curriculum development. Interviewees frequently referred to these, regarding them as given facts. 'We always offer part-time as well as full-time courses, as we must cater for employed students who can only study at night classes.' 'TAFE policy supports flexibility and mobility of career choice for students.' 'We always include a communications component in new courses now.' The persons interviewed appeared familiar with developing TAFE philosophy in the various States, and in all cases, supported those initiatives.

Virtually all respondents referred to finance, and at least half referred to space, time and staff development as constraints which had to be considered early in the curriculum process. Hospitality, Fitting and Machining, and Secretarial course developers were particularly aware of the enormous expense involved in introducing new technological equipment as part of the new course. While they believed they would like to aim for the ideal course regardless of the cost, each had to make decisions about the logistics of equipping colleges and training instructors to cope with new technology. It nearly always involved a decision to stagger the introduction of the course over a number of years so that the number of colleges being equipped at any one time remained reasonable. In the case of the NSW Secretarial Studies course, it also involved limiting the number of electives to those which individual colleges were equipped to deliver.

With Fitting and Machining, the course was planned to run in forty-four colleges throughout NSW, but the expensive numerical control and fluid power equipment needed for the third year was limited to three large city centres. It was considered that to move students to these centres at appropriate times in their third year would be far cheaper than to attempt to equip more centres. In the early years of the new Hospitality course, students had to depend on the good will of industry to make equipment available to them on the job, until it became viable to equip the colleges properly. This was seen also as a method of keeping pace with rapid technological changes, as various new hotels or tourism enterprises would invest in the latest developments, whereas the colleges would buy only once and the equipment eventually would be dated. In the secretarial areas, colleges were already committed to investing in word-processing and micro-computer equipment, and it was hoped that this expansion would keep pace with increasing student demand.

Another constraint which became obvious at the data gathering stage was that some colleges were proving architecturally incapable of coping with developments, such as the integrated open-office model for Secretarial Studies.

Those teams which involved teachers in the decision making process, were more conscious throughout of the need for staff development. Part ownership of the course was seen as a method of overcoming the 'not done here' syndrome and of involving teachers in trialling, formative evaluation and successful implementation. One developer working closely with teachers said that he did not allow other teachers to know who had written each module, so that the acceptability of the new work would not be influenced by jealousy, or status-seeking.

As this research did not encompass the implementation stage, it is not possible to make objective judgements about the importance of staff development to the successful outcome of each course. It did appear, however, that some curriculum developers did not give sufficient attention to teacher interests or staff development needs at the data collection stage. In the case of large projects in the large States, staff development was the responsibility of another section of the TAFE structure, and it was assumed it would be dealt with appropriately at the right time. In the implementation stage of a much smaller project, one developer complained, 'Lecturers should have had more staff development'.

As indicated earlier, all project groups established early links with the appropriate industry, either directly or indirectly. In each case they were aware of, and listened to, the opinions and concerns of employer and employee groups. In traditional trade areas, accreditation and licensing bodies are often based in industry and not necessarily dependent on TAFE. The interviewee from the Victorian Plumbing course listed Sewerage authorities, the Gas and Fuel Corporation, the Master Plumbers Association, Plumbers and Gas Fitters Registration Boards, and unions, as all involved in regulations, standards and licensing and all having to be regarded as constraining agents on the curriculum decision-making process. The Community Development for Aborigines and Islanders Certificate developers had to be sensitive to Federal Government conditions and funding in regard to residential provisions, student allowances and travel grants. They were also working within the short-term funding context of the Department of Aboriginal Affairs, where current provisions could no longer exist by the time the first students neared the end of their course.

An important union constraint existed with respect to the pre-vocational areas. These courses aimed to include some form of placement in the workforce or in alternative projects to be carried out internally. In some areas there are regulations about the sort of work that non-union people are allowed to do, and all such matters had to be worked out carefully before planning work experience components of new courses. The Victorian Secretarial developers referred to a series of early meetings with delegates from Trades Hall.

## 5. THE CASE STUDIES: SHAPING THE CURRICULUM

### 5.1 COURSE STRUCTURE

Apprenticeship courses are required to follow the hours, attendance patterns, awards, etc., laid down by the State Industrial Training Commissions. The required hours of college attendance are different in each State and curriculum developers had to keep the amount of course work within the stipulated number of hours. The Plumbing course in Victoria, however, successfully negotiated for an increase in attendance time and now runs the longest apprenticeship course in the sample, with 1040 hours over three years. The Beauty Culture course is the shortest with 576 hours over two years.

The Horticultural NCP courses were designed as apprenticeship courses, with 860 hours each, although there were no equivalent trade areas in Queensland at that time. Queensland courses were initially classified as Pre-vocational. The other courses classified at or near the 3200 certificate level, range in hours from 600 to 1200, while the 3400 certificates range from 1200 to more than 2000. The interviewees referred only to difficulties in cutting down the number of hours to suit the required State limits, but few mentioned the inconsistencies in classification, level, and length, which have now been identified as a national problem.

All courses led to a TAFE Award, although the nomenclature varied widely from State to State. This also is part of the same problem and is currently being studied as part of TAFE initiatives towards obtaining a national standard nomenclature. Some TAFE Awards were offered in part towards industry registration, licensing or other accreditation. All post-TAFE accreditation was State based, with the exception of the National Standards Commission's national accreditation policy for Trading Standards certificate holders.

All apprenticeships were offered part-time, because of on-the-job requirements during training, but attendance patterns varied from one eight-hour day per week for thirty-six weeks per year; seven five-day blocks or twelve three-day blocks per year; flexible mixed-level blocks, and

so on. Some of the non-apprenticeship areas offered combinations of day and evening classes, and part-time and full-time options. The Photography course recommended a full-time option to students not employed in the industry, but funding was not continued. The secretarial courses were offered initially as full-time courses with a certain group of pre-vocational students in mind, but data had indicated that there would be need for access for students employed in the day time, so a part-time course was planned as a future option. The Fashion course planned full-time and part-time versions. In a number of the courses the full-time offering required more skills development and simulated alternatives to work- experience.

Entry requirements, or 'entry advice' as it is termed now by a number of curriculum developers, are based on TAFE Authority regulations, that is, Year 10 in some States and Year 11 in others. This normally doesn't apply to apprenticeship courses. Some States specify certain grades of pass in certain subjects, most of which are defended by developers as necessary to meet the demands of the course. School-based pass levels are an old form of selection into TAFE, and while they have never disappeared, selection requirements now often include alternatives like 'an approved equivalent or higher qualification', 'appropriate trade level experience', or satisfying the selection committee or Head of Department of the candidate's 'suitability'. The interviewees tended to be divided over the issue of open access and stricter selection according to the rate of demand there was for the course. Entry to apprenticeship and the Community Development courses depended on the student being employed.

Two courses were limited to annual entry, the majority were semester based and two trade areas claimed to have flexible entry. Alternative exit points (e.g. with partial qualifications or a set of employable skills) were built into at least one of the secretarial courses, the Engineering/Construction, Industrial Skills and the Community Welfare courses.

The Trading Standards course was developed specifically as an off-campus offering, and Community Development included some off-campus components. None of the others considered distance education to be relevant.

## 5.2 MODULES AND SELF-PACING

The two aspects of course structure which caused most confusion among those interviewed were modules and self-pacing. This seemed to stem from differing perception concerning these terms by those trained in the systems model and those using other approaches, and confusion about their meaning.

The instructional systems model includes definitions of self-pacing and modularised learning as part of its integrated, task-based approach to course development. Three of the courses were developed on this model, and the three interviewees were quite clear about whether their courses were 'pure' in this sense or not.

The Plumbing (Victoria) curriculum, beginning in 1978, was one of the first to be developed by this method in Australia. Once the team had been convinced of the suitability of the model, they attempted to follow the systems approach throughout. They developed integrated (theory and practice) task-based modules, based on the work of practising plumbers and gasfitters. The modules were self-paced with the significant exception of Basic Skills, and the advanced part of the course. They consciously decided to present Basic Skills by lock-step class-based methods for three reasons.

- Many of the basic skills were considered fundamental to all tasks and would occur many times during the course. It was important that they be mastered early.

- Students would be less disoriented if they were guided for the first six months from school type behaviour and discipline to the expectations of adult education and the more mature demands of self-pacing.

- It was considered a more efficient way to include many unconnected tasks, safety rules and principles of good workmanship needed to build the course on.

The advanced Plumbing modules were not self-paced because they are predominantly theoretical and are tied to frequently changing regulations, so that changing them was considered too big a job to justify the gains. Thus the decision to depart from the chosen model for certain parts of the course was justified on the grounds of the nature of

the work to be taught, the needs of the students, and efficiency of instruction.

The Fitting and Machining course team also decided on 'a degree of self-pacing' and that the course should not be 'strictly modular' in the sense that it didn't include 'pre-test and post-tests'. This was justified in terms of student needs. The third course, Spray Painting, followed the model of the Panelbeating course developed at Richmond College of TAFE (Vic.), and claimed to be modular and developing towards self-pacing. 'There was a fair amount of suspicion about this kind of thing here', said the interviewee. 'The Spray Painting and Panel-beating teams took the opportunity to trial this teaching strategy for TAFE in Western Australia.'

The Office and Secretarial Studies course developed very closely to the systems approach. While it allowed for lock-step teaching, it included organised teaching materials which could be used at the students' own pace. The six main duties identified in the occupational analysis originally suggested subjects, but in the structuring of them as a course they were cross referenced into integrated tasks. 'There was a combination of horizontal task integration and vertical skills check lists', claimed the course developer. The final product was a modular, self-paced course which had evolved during the curriculum development process.

Of the other twelve, some were influenced to a degree by the systems approach, but the developer or team felt free to accept or reject its concepts when it seemed appropriate to do so. Some developers were consciously opposed to tying themselves into a rigid system of decision making, while in other cases alternative decision-making models evolved as consensus on the part of the members of the curriculum team. The Plumbing (NSW) team did not consider self-pacing 'because of the high costs involved'. Hospitality, Fashion, the various Secretarial projects and Engineering/ Construction were each prompted by the nature of their task-based objectives to structure and pace the units in accordance with 'the requirements of industry' or 'at required work-shop pace'. Comments like 'It's fairly self-paced', 'It seems to be self-paced, but it's not', or 'It's really a bit of both', were not uncommon, as the course structures developed in response to the many demands of industry, college facilities, adult education and teacher expectations.

The role of teachers in such decisions could sometimes be seen. Parts of the Community Development Certificate were

self-paced in line with successful Aboriginal educational practices which had been developing during the previous few years. Self-pacing was resisted by Photography instructors.

The selection of subjects or modules in the non-systems developments was equally nebulous. 'They are like modules, but they are subjects really', reported one. 'They are modules but we call them units' said another. 'They are mostly integrated modules, but there are some subjects.' The definition of 'module' as a unit of a certain length appeared to be a common interpretation. 'They had to be modules to fit in with the college timetable.' 'They are actually modules, but they are all different lengths.' 'We design 2 or 4 hour modules to fit into a nine week block.' Trading Standards was the only course with no claim to anything other than subjects, and apparently no discussion of alternatives.

The definition of module, and to a lesser extent self-pacing, is not consistent in different States, nor even within States, and in most cases the alternatives had not been seriously questioned. Several interviewees, from both sides of the module-subject debate, claimed that 'It just fell into place that way'.

## 5.3 COURSE CONTENT

In most cases the curriculum developer was satisfied that the content had developed as a sensible compromise between the sometimes conflicting demands of the occupational data, TAFE curriculum philosophy, and the practical wisdom of the instructors. It is interesting to compare content decisions made in similar courses in different States. The Plumbing project began in 1976 in NSW, and in Victoria in 1978. Both projects flowed into and had some overlap with the National Core Curriculum in Plumbing. Although the developers interviewed referred only briefly to the other projects, their obvious influence on each other is reflected in the way they dealt with content. The decision to include course-work on major water, sanitary and drainage, roof, gas and mechanical services installations came straight from the occupational analysis done in each State. Old subjects like Technical Drawing virtually disappeared, its elements integrated into the theory components of each module, and mathematics was severely tailored to the requirements of each installation.

> Formative evaluation during early trials helped us get the course right. Employers were not prepared to accept specific training responsibility on the job, so virtually the whole course was in the hands of the colleges.

In both NSW and Victoria the weighting of content in the Plumbing courses to include general education, theory, practical, skills development and general industrial experience was believed to have been covered by the installation-based approach. Theory was related to practice; skills were related to each task and were repeated as required, as in industrial experience. General education was limited to literacy, numeracy, occupational health and safety, and was included in the Basic Skills module as well as related to each task as required. A Trade Background component was included in Basic Skills in Victoria, but otherwise 'values, attitudes and personal development' were left until later post-trade courses. 'There was no communications component included', claimed the NSW developer. 'The Unions opposed it.' While registration procedures were slightly different in each State, the design of both courses allowed articulation to post-trade level training.

Sequencing of major course-work was similar in both States. Plumbers do most of their work in water supply installation, which therefore was placed early in the course so that apprentices could become productive earlier. Gas and mechanical services were placed last because they dealt with work which could be dangerous, the theory was more complex to learn, and it was believed that students would benefit from an extra year's maturity before tackling them. Sanitary and drainage installation had been taught late in the old course, because of the physical demands of trenching and timbering. The new course considered the physical demands of these tasks less dependent on maturity than on the cognitive demands of gasfitting and mechanical services. Within the major components, the NSW course was further sequenced, while that in Victoria was self-paced.

Comparisons can also be made regarding the content of the three secretarial courses. These were designed for similar one-year 3200 certificate courses in each State. The influence of a rapidly changing industry was evident in the content of the three courses. Typing had become 'keyboard skills', to include word processing and basic computer work. Communications and language skills, personal development, and attitudes training had all been as strongly influenced by industry demand as by TAFE philosophy.

Shorthand became an elective subject, offered to those who showed interest in and potential for mobility in the workforce. Each team had to compromise with tradition and entrenched teacher interests on this matter.

The NSW course had been looking at cross-school breadth for the sake of later mobility, and attempted to include computer literacy, economics and business law. By that stage the course was becoming too large and the developers were about to go back to the occupational data to re-establish the level of employment this course was meant to cater for.

For some years curriculum developers have been aware of the need to balance general education with theory, practice, industrial experience and skills development in college based secretarial courses. The open office concept is evolving from this balance, and the three States were moving in this direction with the new courses. However a new problem was identified by the Queensland team. Teachers usually insist on long hours of supervised skills development, especially in the form of typing and shorthand drills. It was becoming impossible to apportion the time required for such drills, however, with the introduction of new technological and integrated business practice components. Curriculum developers were able to call on recent research to convince teachers that improving student confidence levels and attitudes of responsibility early in the course should obviate the need for long hours of drills. The process of skills development could be shown to be far more important than the skills themselves. The theories were put into practice by including processes as the most important part of the course content.

Sequencing decisions in the three secretarial courses were based on two factors: some tasks are prerequisites for others and therefore should come first; each section of the course should aggregate to the employability of the student. In one year courses, sequencing is one of the simpler problems.

Mobility, also, was part of TAFE philosophy, and in each case the one year course was designed to lead to more advanced courses in Secretarial Studies, Management and Public Relations courses. Supervision and office organisation were offered as options or deferred to later courses.

## 5.4 OTHER CONTENT ISSUES

Decisions varied on how to include and reject tasks identified from industrial surveys. In spite of significant input from industry in all cases, there appeared to be little question that the bulk of the teaching would remain the province of TAFE colleges. In the apprenticeship courses, students spend most of their time in the workshop or salon, and hence very much under the influence of their employers. Employer groups, however, were not interested in assuming a formal training role, and virtually all content decisions eventually were referred back to TAFE. The Trading Standards NCP course provides an example of this. Previously training had been the responsibility of the employing government departments, and had been fairly piecemeal. It was because they did not want to be involved in training that they approached TAFE in the first place. They felt they did not have the time, the instructors or the structure to do the job properly, and they were also concerned that there was no formally accredited Award for Trading Standards officers in Australia. They turned to TAFE because 'They know how to do these things'. This was the attitude of industry generally in the sixteen projects studied. Beauty Culture probably represented the most extreme example of an industry wanting to keep control of training, at least until TAFE had proved its competence. Photography represented the other extreme, where TAFE took virtualy all reponsibility and the industrial survey was more or less ignored.

The Horticulture NCP project went furthest towards formalising some industry responsibility towards training in its four apprenticeship areas. This decision really came about by accident. An assessment booklet was brought to the first meeting by the representative from NSW. The booklet was being developed in NSW as a check-list of performance objectives. The representative wanted to talk about assessment procedures and hoped to convince the team that the NSW system could be adapted nationally. At an early stage in the discussions another team member suggested that such a check-list could be used by employers as well as teachers, and the idea grew from there. When State representatives reported back to their local industrial groups, the idea was mentioned and met no opposition. The objectives of the four courses, once finalised, will adapt easily to check-list format, and in those States where the assessment booklet concept is adopted, it could be used by employers as well as teachers. In relatively new courses, such as these, employers should have little difficulty in accepting part of the training role.

The rejection of tasks for the Beauty Culture course occurred as the developer sorted out the operative level of the job profile from other tasks. There was no clear distinction between levels in the industry and it would not have shown up in the occupational data. Electrolysis and the use of certain dangerous chemicals and equipment were eliminated from trade level training. These decisions emanated from the developer's experience of the distinction between operative, skilled and paraprofessional levels of industrial practice in related fields, like hairdressing, as well as an educational philosophy which teaches simpler and safer tasks before complex and dangerous ones. In response to TAFE policy directions on such matters, business communications, occupational health and safety, values training, decision-making skills and personal development were included.

A further factor in the choice of what to include and what to reject in the course is fairly self-evident, but should be mentioned in the context of curriculum decision making. Occupational data throws up many trivial tasks like 'using a hammer' or 'putting away tools'; curriculum teams eliminate such tasks virtually without knowing they're doing it.

There are, however, a number of small tasks, such as 'storing tools' or 'clearing the workbench', which are considered important enough to include collectively as part of 'workshop practices' or 'workmanlike behaviour'. This opens up the whole area of values, attitudes and work ethics as part of the curriculum. In the traditional trade areas, there is a tendency to leave much of this kind of teaching to the individual instructor. The Victorian Plumbing course, however, includes a component called Trade Background, which deals with workers' rights and responsibilities. Western Australia's Spray Painting course includes an Industrial Trends component. Health and Safety teaching also comes into this category. TAFE Authorities are taking more interest in these areas in their formal policies, even though the need for them doesn't always emerge clearly from the occupational analysis. NSW TAFE has developed an Industrial Relations module since these interviews, and this is to be included in trade courses. There is resistance, however, to introducing instruction on either Unionism or Management at the apprenticeship level, and ethics usually are confined to safety, tidiness and thoroughness. The values and attitudes component of the secretarial courses have already been mentioned as important.

The Beauty Culture curriculum provides an unusual example of industry demand for a set of values which would not have arisen from the occupational analysis or from TAFE philosophy. The interviewee referred to the psychological techniques of making the client feel good, or of treatment by the placebo effect. She called it the 'witchcraft' element of industrial practice. This was judged important and was included in the course objectives. It was also important from an ethical point of view to distinguish this positive form of 'witchcraft' from the more dubious and dangerous practices in the field, and to ensure that students could clearly tell the difference. 'We have to teach them some ethics because there's not a lot in the industry', the interviewee commented.

The problem of weighting skills development, theory, practice, industrial experience and general education offers more problems for courses taught internally with no placement or work experience. The Hospitality certificate level course in Western Australia is college-based until it articulates with the Diploma (equivalent to the stream 3400 Certificate elsewhere) where industrial experience is mandatory. This industrial experience and skills development aspect is catered for, however, by the fact that the colleges run restaurants and catering services for the public. General education is included in the syllabus because of the nature of much of the work. The only problem apparently remaining is the linking of theory and practice around the tasks. In the words of the developer

> about 50% of the marks are awarded for theory, and they don't match up too well in all subjects. However it seems to be working well.

The other two courses which are college-based, apart from the secretarial courses discussed earlier, are Industrial Skills and Engineering/Construction, both pre-vocational courses. The repective developers commented

> The teachers wrote the syllabus, given certain parameters. They had to consider the correct balance for students in special circumstances. Industrial values and attitudes are incorporated through workshop simulation. A student can be fined for unsafe behaviour for instance, to simulate industrial experience.
>
> It was more important to include skills development, etc., than in apprenticeship courses, because apprentices in the workshop get lots of

extra jobs. The teachers were good at telling us these things. We had to make some conscious decisions about them.

Sequencing course elements seemed to offer few problems. 'The later modules require a more cognitive approach.' 'The course gives the fundamentals first.' 'We worked from easy to hard, increasing the number of principles used.' The two pre-vocational courses had to sequence the course components particularly carefully to fit in with the various apprenticeship levels, so that students could articulate easily if and when it became possible.

Only one project claimed that selection and sequencing had been done according to a set systematic formula. This was Fitting and Machining.

## 5.5 TYPES OF TESTING

All courses were developed with a consciousness of the link between objectives and assessment. The objectives were usually described in detail, and in the more practical courses, the objectives were competency and performance based.

Probably only one course - Trading Standards NCP - could be described as consisting of traditional academic subjects, and assessment procedures followed traditional marking methods. Metrology II was the only practical subject out of eight in this course, consisting of field work, and was to be supervised and assessed by a senior field officer. All other subjects were to be administered and assessed by distance education mode through the Victorian TAFE Off-campus Network.

Photography also remained as a relatively traditional subject-based course, and was to be assessed by traditional methods. The course was being redeveloped for a single Sydney college, and teacher control of testing and marking was evident.

The Community Development Certificate also contained some traditional academic subjects. These were ready made subjects from other courses in which the students enrolled to complete relevant options.

Some parts of the course were to be tested formally by the teacher, according to set standards and conditions, and others, such as assertiveness and personal development, were formatively assessed, by teachers and/or peers and/or self.

All other courses were based, at least partly on performance objectives and mirrored the findings of the occupational data. Testing procedures ranged through participation, individual and group projects, assignments, self-testing, formal tests and final examinations. One of the major problems identified by this part of the questionnaire was that of testing theory components. A number of developers described a real attempt to break away from the old separate theory and practice tests. In those courses which relied entirely on continuous assessment, the completion of each module involved an integrated blend of written (theory) answers and the performance of a related task. The theory questions involved knowing or consulting regulations, identifying the best procedure or equipment needed, selecting information, figures or formulae to perform the task, and so on. Such theoretical questions would normally be considered reasonable and appropriate according to the requirements of tasks performed in industry.

Teacher resistance to non-formal testing was mentioned specifically in four cases, but it might be presumed to be more widespread; however, industry resistance caused even greater problems. Employers have learned to trust formal examinations, and are suspicious of continuous assessment, self-testing, and even, in some cases, of allowing the teacher to judge whether a performance is up to an acceptable standard or not. The Victorian Plumbing course included a thorough and comprehensive system of testing by graded competency based performance. The developers were very proud of the blend of commonsense, accuracy, soundness and workmanship required of the student to perform each task and complete each module over the three-year period. On top of externally tested theory exams on the advanced sections of the course, the Plumbers' Registration Board had imposed a sixteen-hour practical examination in the third year. In the words of the interviewee:

> This was the saddest thing which could have happened. Our assessment method was devalued by the decision. They should have helped us improve our testing procedures, not imposed new ones. Their methods were out of step with the philosophy of competency-based testing, and it imposed an unfair burden on the shoulders of those students

who knew the work but were not trained in old fashioned examination techniques.

There was no such problem with the Trading Standards NCP course. Specialist content expertise and writing time were donated by individuals from the National Standards Commission and the Australian Institute of Trading Standards, working in conjunction with instructional designers and curriculum developers from TAFE (specifically, Western Australia's Technical Extension Service). Non-specialist content already existed in various TAFE Authorities and had only to be identified and collected. When the time comes for the National Standards Commission to accredit the course, TAFE assessment methods and standards will be familiar and acceptable.

In another variation, the appropriate industry associations wanted to accredit the Beauty Culture course, but NSW TAFE was able to insist on its right and qualification to accredit it internally, in line with their policy of TAFE Awards. Neither the Australian Association of Beauty Therapists nor the Australian Association of Professional Aestheticians are yet strong or consolidated enough to insist on any further alternative.

## 5.6 OTHER ASSESSMENT QUESTIONS

The marks or mastery problem was evident throughout the case studies. As one curriculum developer put it 'The debate influences all current development'. The comments sounded not dissimilar to the module/self-pacing questions mentioned earlier. 'This course is mastery to a degree.' 'It is a mastery based, but results have to be converted to numerical scores.' 'Marks have to be determined for computer purposes.' Somebody mentioned the situation being somewhat like 'the tail wagging the dog', and that the larger the computer records system was, the more difficult it was to find a way to enter mastery records.

Surprisingly, comments on standards, which would normally be related to competency-based testing and mastery, were far more definite. 'The course is to run in six colleges; standards have to be stipulated' (Hospitality); 'There are strict typing standards built in' (Secretarial NSW); 'There was a lot of exchange with the Public Service Board regarding their acceptable standards; these were built into the course' (Business Studies Qld.); 'There are built in standards, especially in the ethical sense' (Beauty

Culture); 'The tests are college-based but the curriculum document will build in guidelines for testing' (Engineering/ Construction). The Plumbing courses both claim that standards based on accuracy, soundness and workmanship are stipulated in every task. The Horticulture, Trading Standards and Fitting and Machining interviewees all referred positively to the setting of standards.

However, what didn't become clear from the interviews was how thoroughly the standards were defined and how strictly tolerance levels were stipulated. A teacher of the Victorian Plumbing pilot programme reported testing a drainage and tap installation, checking angles, fixtures, joints and welds from a check-list. He was frustrated by having to 'pass' the installation even though the tap was leaking; that particular standard had been omitted from the check-list, possibly because it was too obvious to include. Fortunately that course was still in the pilot stage and there was a mechanism for corrective feedback to the curriculum developers. The story however indicates the sort of problems involved in setting performance standards.

Conditions, as factors of testing, were virtually ignored in the answers, except for those curricula set on the systems model, where they are automatically built into the performance tests together with standards. Most curriculum developers assumed that tests were held under fair, supervised, classroom conditions, usually with a stipulated time limit.

Similarly, questions of frequency of testing and the number of attempts allowed were generally considered to be less important than other aspects of assessment. The majority of the courses allowed for a large proportion of internal testing, and only those tied to statewide term or semester examination timetables felt constrained to link testing to a formal examination.

There was evidence in the case studies of a growing TAFE philosophy which avoided failing students, if at all possible. Students tend to drop out or find alternative employment rather than fail. 'If they are not making the grade, they get more help', claimed one developer, and sometimes this philosophy finds its way formally or informally into the curriculum document. The extreme exception to this trend was in the Photography course. Class enrolments over the four year part-time course approximated 170, 90, 30 and 14, an overall attrition rate of 91.8%! This course was run in one college and examined internally. The teachers concerned claimed to be selecting

a highly talented elite, but the curriculum developer referred to it as 'grossly punishing to adult student morale'.

The three secretarial courses were based largely on progressive achievement tests, so that students could set their own goals and achieve them when they were ready. In Victoria, typing and stenography subjects were tested externally at the end of the course, because of industry requests for a statewide standard on the central skills to be used on the job. The Hospitality course encouraged students to resubmit assignments which were not up to standard. The pre-vocational courses in Industrial Skills and Engineering/Construction, as well as the Community Development course, built a counselling function into the course work so that students were continually encouraged to achieve the next level of attainment. The Spray Painting course in its pilot year admitted to no failures, although some learners did take a little longer than others to complete the required modules. The Plumbing courses allowed for modules to be repeated, assessing the subject as 'yet to be achieved' rather than failing the student. It appeared as if the Horticultural courses, also, with their assessment booklets, would allow for the same treatment. Trading Standards NCP, with its traditional academic subjects, and its end-of-semester examinations, may prove to be inflexible on the issue of failure, but the student market has already been identified as mature and highly motivated members of the workforce and significant failure rates are not expected.

# 6. THE CASE STUDIES: CURRICULUM DECISIONS

## 6.1 SIGNIFICANT DECISIONS

The interviewees were asked what they believed were their most successful or most vital decisions. Their answers ranged through all aspects of the curriculum process.

The comments on the data gathering stage pointed to its importance in the success of the curriculum process. 'The occupational research governed the curriculum process; it meant we had a very clear picture of industry needs.' 'The occupational research was extremely thorough and saved time when we came to the actual writing.' 'Everything went well because we did our homework properly.' 'The industry/ teacher/student survey was vital to our decisions.'

Two respondents referred to the importance of what was going on overseas. 'We used an overseas document as a spring board; this gave us an idea of overseas trends.' 'It was important to send a teacher overseas; she was able to give us independent advice.'

A warning about the limitations of occupational data when there is resistance from elsewhere, was sounded by one.

> Any attempt to use curriculum research methods as a weapon with which to bludgeon teachers into change is foolhardy. Unless there is a very large budget for the research, the data will not be sufficient to argue a water-tight case, even if done well.

There was a feeling of satisfaction in a further comment where the industrial survey had supported recent TAFE directions in educational innovation.

> An accidental spin-off of the occupational data was that it identified certain personal characteristics needed on the job. When we introduced these to the course, student confidence levels increased to the point where we could decrease the time previously spent on basic skills and drills.

In one case where the role of the curriculum development team was particularly unusual, they considered it very important that they were aware of that role.

> We have a double educational role - one to the students and one to industry, but DEIR were using us to clean up the industry. This puts TAFE in a difficult situation. We haven't bowed to industry; we've had to be pretty independent, and most of them were quite ignorant of what we were trying to do. I suppose many of the traditional apprenticeship areas might have started this way in the past.

There were a number of comments on the importance of the course structure. It seems that when at times one small element of course structure fell into place, the rest became much easier.

> The most important thing was the realisation that the whole course fell into place around the concept of 'installations' as distinct from 'areas of study'.

The most significant decision was to change the up-front phase of the course from basic skill development to career related studies. The career related studies concept encourages teachers to involve students in experiencing terminal trade skills prior to making career decisions. Basic skills development is delayed until the second phase of the programme.

> It proved highly successful going modular - it disciplines lecturers and students.

> The use of an integrated, modular style of syllabus - the structure was sound and it allowed earlier productivity. The assessment concept was good too - accuracy, soundness and workmanship - these could be portable criteria for other trade courses.

> The concept of this kind of cross-disciplinary, broad based prevocational course is a real break through - it's a brand new course for a completely new market in a whole new set of circumstances. It is cheaper also than pre-apprenticeship courses because it enables students to use what is there instead of buying new equipment.

> We put 'process skills' rather than 'skills' at the centre of the curriculum - this was vital to the way the course developed;
>
> The recognition of the philosophy of participation of Aborigines in Aboriginal education affected who worked on it, who helped, how it was done, etc. There was also the significant inclusion of counselling, peer group support, support systems, and gearing the course towards specific cognitive and affective cultural needs.

A number of the interviewees referred to the importance of the people involved in the curriculum development. It is interesting to compare these comments with those on personnel in the next section, where the wrong combinations of people were seen as a problem in the curriculum process.

> The people in the advisory group were very important - a good mixture of industry and trade specialists and teaching/curriculum specialists. Industry can pull the wool over the eyes of a poor teacher, and we teachers can get too tightly wound up in our own little webs.
>
> We had an excellent person from the TAFE curriculum department. It saved us going up too many blind alleys and the curriculum decision making structure itself was very good - good mixture - we were a travelling team, meeting weekly in different colleges, inviting staff and making them feel part of it - we weren't too centralised.
>
> Maintaining consistency in the task force membership is an important factor in developing a good working relationship, which enables a more efficient development of the curriculum.
>
> The appointment of a co-ordinator in the three largest colleges was very important - they helped disseminate and implement the course.

Another team, consisting mainly of instructors, made an interesting decision about dividing up the teaching and curriculum development duties of its members.

> We made sure our curriculum developers stayed in front of a class, so they wouldn't lose touch with the realities of practical teaching.

One respondent anticipated possible personality problems and set up a mechanism to protect teachers who were engaged in writing the instructional materials.

> We didn't divulge who wrote which programmes because it can stifle positive feedback and create personality clashes.

The Trading Standards team had two groups of people to thank for their very survival. They referred first to the Heads of TAFE External Studies, who 'recognised the special problems of off-campus development' and were prepared to co-operate in a joint materials sharing exercise. Second they acknowledged the 'constructive and persistent attitude' of the team's industry representatives 'who worked so hard and in their own time' to bring the course to fruition. Such high approval of 'industry' people was rare among the case studies, but the National Standards Commission and the Australian Institute of Trading Standards can hardly be considered to be 'industry' in the usual sense.

The respondent for the Horticulture national curriculum project also spoke of the tremendous satisfaction which comes from successfully shared initiatives.

> There has been an increased level of co-operation between states/territories, which has led to a sharing of student/teaching materials and has laid the foundation for a much more efficient use of TAFE resources.
> We have also developed a centralised data base for a horticulture learning resources index and curriculum documentation, accessable by all States/Territories.
> Rotation of meetings in different states has ultimately resulted in increased individual teacher contact between States.
> We now have for the first time, national curriculum documentation at the basic vocational/ trade level, in the 4 Horticultural Trades.

One curriculum developer mentioned that the procedure of starting with the third and final level of development was one of the most important decisions. He gave a number of reasons for this.

> Having a small development team, if we had started at Stage 1 we would have been like dogs chasing their tails trying to produce the learning package

to keep in front of the students. We avoided the risk of a student saying where's the rest of my self-paced program?

The final year apprentices were mature and positive in their approach to the pilot and were constructive in their advice and criticism. They were going straight back into industry and were, at that level, capable of communicating with employers about the changes. They in turn will be possible employers themselves within a short period of time.

Early programmes are never as good as they will be when the developers become more experienced. Thus when stage 1 students enter the new courses after 3 years of development, the whole programme will be well designed.

## 6.2 DIFFICULTIES AND PROBLEMS

Personal and interpersonal problems were identified on several different levels. There were incidents where the developer felt there was undue interference from senior teachers. The following comments indicate irregularities in the seniority of the curriculum developers in relation to some teachers and suggest the existence of power struggles as curriculum developers establish their specialist expertise within the TAFE structure. The situation is complicated further in the case of teachers seconded as curriculum developers.

> There were difficulties with senior teachers, who kept giving their own ideas on how the curriculum should be developed. The team had to tactfully side step many suggestions and directions that were not based on the results of the survey or on the facts. We had to take care that the project wouldn't be compromised.

> There was an extremely strong determination within the school to retain control of the course. It is always difficult to eliminate lecturers' favourite topics and methods. They hate it, even when the industrial data goes against the old ways.

> One or two teachers dominated and they filtered out too much. Some were very biased, and most had been away from industry too long.

> The most difficult thing for me was to be seconded out of a teaching situation and not given the authority of seniority in the curriculum task - some of the seniors made it difficult for the developing team, in spite of the backing of the Department and of industry - this was the hardest thing in implementing change.

Teachers working on course development, writing and trialling educed more sympathy, although there was evidence of some impatience by both teachers and curriculum developers when curriculum development principles were not easily assimilated.

> It is difficult to get lecturers to differentiate between 'nice to know' and 'need to know'.
>
> We had to really stress this 'process skills' concept in staff development. We were pioneering changes which teachers found very difficult, and they resisted.
>
> It was very difficult getting teachers released for full time work on the curriculum, and for part time teachers engaged in course writing to be left alone and given their proper quota of writing time. That is always a problem of writing in your normal workplace.
>
> There were difficulties in sharing the preparation of material between participants to get collective ownership and the need to maintain internal consistency within documentation.
>
> We were dependent on cultural judgements on the content and length of subjects like communications. Decisions were being made by non-Aboriginal people who didn't know from experience the needs of Aboriginal students.

The problem was even more difficult in the case of Trading Standards where some of the material was written by individuals from industry. Even though they had the assistance of an instructional designer, the writers were not trained educators nor experienced in instructional writing.

> One problem was the writers' lack of understanding of the time involved in producing curriculum material. Even when much work was done in their own time, the output lagged far behind the initial enthusiasm.

One developer expessed hurt concern at the attitude of teachers when he felt he had made every reasonable effort to involve them in the process. The most disappointing thing was the change of views of some college staff from one of enthusiastic support for change during development to a position of condemnation at the implementation phase.

Some of the problems were seen to come from the TAFE system, and reflected difficulties over time and finance.

> We were two people doing the work of three. Alongside all that occupational data, we also had decisions being handed down from executive level - also anti-discrimination and occupational health and safety were included by legislation - the course is far too big and will have to be cut down enormously - there are only certain parts we are allowed to cut - real political constraints.

> The people high up tend to balk at task analysis - it seems so expensive. They prefer to talk about 'fast track' methods - but we can prove it is more cost effective in the long run.

> People have been quoting outrageous figures as the cost of developing our self-paced programmes. It will cost about $500,000, but this is for two complete trade courses. Incorporated in these costs are buildings, fixtures, AV soft and hardware, developmental materials, and wages for two study areas. When you consider this was a major overhaul of two study areas that hadn't had a curriculum change in ten years I believe it will prove a lot cheaper than a traditional course to maintain. We don't need 16 sets of everything for instance, now that it is complete.

Some financial problems came from outside TAFE. A case in point was the Community Development Certificate, which had to depend on money from the Department of Aboriginal Affairs for the course to be run.

> The biggest problem is the battle we are still having with the funding bodies which will affect the length, the quality and success of the course.

Problems and constraints imposed by TAFE funding and procedural directions were compounded in national curriculum developments because they were attempting to satisfy the needs of eight TAFE Authorities at one time. The respondent from one of the NCP teams listed the following as the greatest difficulties in curriculum decision-making.

> The differing curriculum requirements and practices in each state/territory made it difficult.
> The members had little appreciation of the situation in other States. Also, the understandable wariness of some states to commit themselves to a curriculum project which could have staffing, equipment and facilities implications, beyond their present level.

The selection of course content caused some problems for some developers. 'It was very difficult to give on-the-job experience without having an on-the-job component; we had to devise group projects.' 'We had to run a trade level programme when no other state was; we had no choice; this was a severe restraint.' Two further content selection issues were pursued in more detail.

> The selection of content areas was strictly on economic grounds, numbers of unemployed youth, underemployed teachers, industrial futures and so on - this was a difficult constraint.

> The most difficult thing was to leave things out, to be hard-headed about the things of the past which just weren't part of the job any more.

## 6.3 SUGGESTED IMPROVEMENTS

The interviewees were asked to suggest ways they could have improved their curriculum process if they'd had the opportunity to do it again. Only one respondent had the confidence to claim 'Basically it's a good course and I don't see how else we could have gone about it'.

On the topic of the occupational data collection, three comments suggest a need for faster more efficient methods of establishing the needs of industry.

> The survey could have been better. We had masses of data and got a lot of flack from staff who believed that they knew what industry needed more than industry did. There are better ways of doing it nowadays.
>
> I would never call for public submissions again! We really did far too much work.
>
> Never use a task inventory approach if skills in the artistic realm are important to a course - task lists are hopeless in describing artistic skills.

Some commented that the project organisation could have improved.

> We lacked support services. There was too much idealism and we tended to ignore the administration of the project as a whole.
>
> We could have improved the publicity, or the 'marketing' of the project in its initial stages.

The national project teams were particularly aware of the need for good organisation because of the compounding of difficulties across distances and different organisational bodies. These comments indicate the different needs of different teams.

> We needed more frequent telephone contact between meetings to check progress and understanding of what is required for the forthcoming meeting. (Horticulture)
>
> We should have held meetings on rotation in different state centres to ensure observation by TAFE staff and industry representatives, as well as giving task force representatives a picture of the prevailing situtation in the different states. (Horticulture)
>
> Post initial meetings should have been held in Victoria where current and proposed course implementation are effected. (Trading Standards)

The Trading Standards team realised that their problems stemmed from a misunderstanding by the Curriculum Projects Steering Group of their original intention. 'The original proposal should have made it quite clear that the course had to be produced in off-campus mode.' The respondent also commented that 'The heads of external studies should have been formally involved at the outset'.

Comments on the staff development of curriculum team members and the teachers who were to implement the course occurred in more than half the interviews. A number of important issues is evident in the following quotations.

> We should have had curriculum training first so we didn't start so slowly - a consultant was brought in later and it helped no end.
>
> Teachers involved in curriculum development are simply not well enough prepared for the task.
>
> I would take more care in future about which teachers were involved in the curriculum process, and perhaps use more industry people.
>
> I would stick rigidly to the technique but we should train the teachers to use it, because they know the subject.
>
> We should have involved teachers earlier in the programme. We needed to let them know why the changes were taking place. One to two months with 30 teachers is not enough - there were still 200 left to convince. We should have taken five years.
>
> I would have liked more contact with lecturers. Although they piloted each module for us, new teachers got out of step.
>
> I would have liked the authority to monitor the pilot programme.
>
> The colleges were all at different stages. We should have allowed more flexibility and more choice. We could have been more sensitive to local needs.
>
> Teachers needed more time. It was all too fast.

> The course should have been thoroughly monitored and evaluated.
>
> More in-service training of teachers in the early stages would have made the task of implementation easier for all.
>
> We needed further meetings with colleges prior to implementation. This could have assisted a smoother introduction and a more receptive climate in the colleges.

The need for more attention to teaching strategies, was mentioned specifically in three of the curriculum interviews.

> We should have spent more time on assessment techniques.
>
> We perhaps could look at self-pacing, individualised computer programs, etc. We could have used some Keller Plan or similar techniques.
>
> I would have liked more Aboriginal involvement in the course - more travel to colleges, informal talks, more large group sessions. We could have been more conscious of Aboriginality, but funding and distance constrained us.

Most of the developers had been involved in pilot programmes and implementation issues. These were often used as formative evaluation as part of the curriculum development process, and gave important insights into the successes and shortcomings of the project. Here are some of the comments.

> In the best of all possible worlds, the implementation requirements for a course should be assessed early, and preferably be approved in principle prior to final syllabus development. The biggest brake on innovation is, I believe, the reluctance of syllabus writers to trust the system to release the resources needed for good educational provision. This is a major structural limiter on the provision of good education by TAFE.
>
> There are real problems expected in trying to implement the mastery concept in over 100 colleges; there will have to be massive staff development.

The course has too broad an entry level; there will be too many students in the middle level.

Implementaton problems included equipment not arriving in time. The delays upset the start of the course.

We made a mistake by running the pilot in a small country college with students on block release. It was too successful; they were all too keen; we didn't learn enough from it.

## 7. CURRICULUM DECISION-MAKING: DISCUSSION

### 7.1 PREAMBLE

It became clear from the interviews that the curriculum developers had a strong sense of professionalism in their decision-making. They considered their decisions were appropriate and were able to justify their reasons for making them. This applies to those seconded from teaching as well as to full-time curriculum developers.

Their explanations of curriculum decisions were invariably based on occupational, existing course and context data. They were all apparently reasonably familiar with the educational questions reviewed in Chapter 2, and spoke of them in the context of their curriculum decisions as though they had been aware of them throughout the development process. The curriculum questions posed in Chapter 3 were more or less addressed, possibly in different words and not so formally, and interviewees' reponses indicated that such questions were fundamental to their decisions. The curriculum developers interviewed were, on the whole, 'educated' in vocational curriculum issues and curriculum procedures, and steered their decision-making processes through them with confidence. While this confidence may not have been constantly evident throughout the curriculum process, it certainly was in retrospect as the curriculum developers spoke about their projects.

What does this indicate then? Does it assume that a correct procedure does in fact exist for curriculum development? Do occupational and other data, subjected to informed curriculum questions, invariably determine that the correct curriculum will emerge? Would the same data and the same answers to the questions, produce the same curriculum again if the process were repeated. The case studies indicate that it wouldn't. Plumbing and secretarial curricula produced in different States contained similarities, but were different enough to indicate that other factors were at work besides informed curriculum knowledge and procedures. The differences between the sixteen projects were many, and each emerged with a flavour and personality of its own. This reflects the presence of other influences not mentioned, and possibly not recognised, by the respondents.

This chapter suggests some not-so-obvious trends and likely hidden influences on curriculum development in TAFE, and relates them to the case studies.

## 7.2 NEGOTIATING AND SHARING

Negotiation strategies emerge as one of the most important aspects of vocational curriculum decision-making. 'Curriculum development is a political as well as an educational process', according to Noble (1985, p. 127) reiterating the words of a number of the interviewees. 'Hard bargaining' is often needed, formally and informally, and agreement 'may entail compromises over course content and structure' (Noble, 1985, p. 128). He writes of 'lobbying' as a well-established method of influencing involved groups, but warns that it must be employed with care.

> Some external authorities and influential individuals may regard lobbying as an attempt to subvert legitimate decision-making processes. Curriculum planners are probably better served by developing the art of gentle persuasion and building up good relationships over a period of time ... (pp. 128-9)

While the interview schedule did not ask specifically about negotiation strategies, many of the interviewees' answers implied their experience of hard bargaining, lobbying and gentle persuasion.

Noble also warns curriculum planners to be content with short to medium term reform 'a piecemeal approach rather than a single comprehensive attack' (p. 129). He refers to 'incrementalism' as an important aspect of curriculum reform, and claims that 'modest gain is preferable to none' (p. 129). A curriculum plannner, he says, must be pragmatic and may have to be content with the production of a modified course proposal, rather than insist on its educational purity. This was the case with the Photography course. His advice coincides with the experience of a number of the interviewees, who indicated that they were aware of the political nature of their work, and were content to accept compromise as a valid and appropriate part of their decision-making function.

The ability to anticipate objections would ensure greater success, Noble writes, and this depended upon good planning.

> A desirable strategy may be to rely on incremental change to secure useful, but limited, reforms and to resort to planning to achieve more extensive changes. (p. 129)

The planning function exists in TAFE Authorities' procedural documents, staff development workshops and internal research (see Chapters 1 and 2). This level of planning does help. It gives the curriculum developer the credibility and support of official and tangible procedure and direction and TAFE developers are happy with it on the whole (see pp. 56-8). However their comments bear out Noble's contention that they do not wish to follow 'a rigid sequence of steps', and that a plan 'must be constantly subject to review and modified in the light of progress, surprises, new knowledge and fresh insights' (p. 129).

Another factor influencing decision making arises from the very nature of vocational curriculum as a new and rapidly growing field of thought. Concepts do not form in a new field until they have been formulated in words and phrases which people recognise as true to their own experiences. Many of the present curriculum insights did not exist four or five years ago. The dynamic of development requires an interchange of ideas and experiences, of writing and criticism, of seminars and workshops, as it emerges as a field in its own right. Even then the concepts and principles continue to evolve. Meanwhile many good ideas remain half expressed, half tried. Some are tried and rejected several times before they are accepted into conceptual curriculum theory and available to the practitioner. Curriculum decision-makers have a responsibility to keep in touch with and to be aware of the work of their colleagues, to try novel and interesting approaches and to keep others informed.

Sharing curriculum ideas occurs on formal and informal levels. The Plumbing developers from Victoria and New South Wales were brought into closer contact through the National Curriculum Project. The Spray Painting developer had visited Victoria to observe Automotive courses in operation there. The Beauty Culture Trade course did not begin until the developers had talked with people in Victoria and Tasmania. The Horticulture task force included representatives from all States and Territories in Australia, as did Trading Standards at its first meeting. With increasing experience and mobility, curriculum

developers cannot avoid sharing and borrowing ideas. This is reflected in a lessening of hostility and an increase in confidence and co-operation, both individually and on the part of TAFE Authority curriculum branches.

Until now, national curriculum development has placed a heavy emphasis on the concept of 'core curriculum', or those parts of TAFE courses identified as common and acceptable to all States and Territories. There was scope for wide variation in the non-core sections, and local versions of national curricula were often quite different from each other. By mid-1985 there had been over 40 national projects, and fears and hostility had lessened through the accumulation of shared experience and success. Both Trading Standards and Horticulture represented this new type of national curriculum. State Law components in Trading Standards and common plant varieties in Horticulture, for instance, were incorporated not in separate non-core sections, but catered for within the overall national curriculum. A new element of professional trust was observable from the satisfaction task force members expressed when a State-based difficulty was overcome or an individual's problems solved.

National Core Curriculum projects, or NCCs, are now referred to officially as National Curriculum Projects, or NCPs. The original need to use the 'core curriculum' concept to protect ownership and control is likely to become less significant from now on. Shared ideas and experience produce confidence. With this new confidence, the 'not-done-here' syndrome should weaken. Trading Standards provides the classic example. The Heads of TAFE External Studies in two states gave their support to the co-operative development of off-campus materials. This in itself was a major breakthrough, but it was strengthened by the appointment of course developers from both States with authority to negotiate directly with the curriculum team and produce results as quickly as possible. The results of their negotiations led to materials from four States being accepted by the course administrating body. The materials carry the logos of six organisations as a symbol of co-operative development, and became the first truly national TAFE course in Australia.

TAFE Authority-based curriculum development also shows signs of increased exchange and sharing of curriculum ideas. Curriculum language, concepts and procedures are being exchanged and discussed. Developers from various States are at least communicating, and if not necessarily changing their ideas, they are enlarging them.

## 7.3 DECISION-MAKING

Methods of problem solving have been described by various writers in terms of reconstructing the problem, elimination by aspects, narrowing down of alternatives, persuasion by evidence and so on. Anderson (1985, Chapter 7) discusses this literature on personal decision-making at some length and many of the factors he identifies can be seen in operation in curriculum decision-making. Factors of personal decision-making are important, but in the curriculum development process they are magnified by the number of people involved in the decisions. It is a process involving group dynamics as well as individuals. Although in most of the case studies, one person was responsible for the management of the curriculum process, none of the interviewees spoke with the authority of a single voice. TAFE Authorities, administrators, teachers, professional organisations, unions, managers, employees and students were involved in varying degrees.

Much of the literature on decision-making is limited to controlled laboratory experiments as a process without a past or a future and ignoring the personal and contextual factors which shape competition for control and acceptance between and within groups (Anderson, 1985, Chapter 7). Curriculum decision-making is a dynamic process, dependent on the personalities, values, emotions, aspirations and knowledge of the people involved in it. It involves social, intellectual and professional rules. It assumes effort towards shared understanding, co-operation, group consensus, give-and-take and polite behaviour. When these 'rules' are broken, the curriculum developer sees it as a threat and a problem. Several of the case studies identified a dominating individual as a problem. Several others referred to 'interference' from TAFE, teachers or industrial bodies - in each case from outside the decision-making team - as creating problems for the curriculum process.

Curriculum development is a matter of control or ownership by both individuals and groups. Participants of a group develop a sense of ownership which justifies their control over the process and the final decisions. The control itself becomes a shared thing and individual members of the team are not permitted to hold too much at any one time. Individuals with contrasting ideas are permitted to present and discuss their points of view, but the group as a whole has to be convinced, or compromises found, so that the new idea becomes accepted - not always as the best idea, but as the best idea in the given circumstances. This may take

time. There were a number of references in the case studies to long debates. In the case of the Horticulture assessment handbook, however, the seed was sown in the minds of team members early on, and grew slowly, virtually undiscussed, as the curriculum process continued. At other times the team came to a standstill on what to do about given problems, and allowed an individual or an outside 'expert' to supply an answer which they happily accepted as their own. This happened in the Victorian Plumbing course when they invited the systems analyst to help them structure the course design.

The larger the working group, the more complex the rules of control become, and the wider the acceptance of new issues has to be. If control or ownership becomes unbalanced, the group process is at risk and the curriculum developer is aware of a further problem area.

Anderson writes of valency, that is, the energy or active force at work in a decision-making group, and cites Hoffman's (1979) model to describe 'the degree of attractiveness or acceptibility of an alternative which impels a group to adopt it as a decision'. He suggests that the decision is not necessarily the right or the only one, but that

> the alternative most likely to be chosen has the highest valence and these alternatives tend to be differentiated early in the discussion. (Anderson 1985, Chapter 7)

A group reaching early consensus on valency, feels the process has been smooth and successful, and the decisions appear correct.

Related to this concept is the importance of shared beliefs. Anderson writes of 'back and forth' movement between defining the problem and generating solutions (Chapter 7). Through this movement, shared values are established. The Trading Standards team, for example, consisted of TAFE and industrial representatives working closely together. Educational and industrial consensus was shared early and new concepts were soon accepted as given principles. TAFE concern about correct instructional design strategies is a case in point. The Beauty Culture team solved their need for shared values in the opposite way. Industrial contacts were gradually eliminated and narrowed down to those they felt they could work successfully with - to the extent that one professional association was excluded completely.

A number of researchers have explored the importance of steps or stages in decision-making, although the findings don't necessarily agree. The analysis of the five stages of decision-making by Janis & Mann (1977, p. 172) is of interest to curriculum teams, as each participant, not merely the managing curriculum developer, must go through these stages.

| STAGE | KEY QUESTIONS |
|---|---|
| 1. Appraising the challenge | Are the risks serious if I don't change? |
| 2. Surveying alternatives | Is this (salient) alternative an acceptable means for dealing with the challenge? |
| 3. Weighing alternatives | Which alternative is best? |
| 4. Deliberating about commitment | Shall I implement the best alternative? |
| 5. Adhering despite negative feedback | Are the risks serious if I don't change?<br>Are the risks serious if I do change? |

Janis and Mann (1977) issue a caution against jumping stages by drawing attention to the vulnerability of the decision-maker to post-decisional conflict if this is done. Where control of a decision-making situation is illusory, decision-makers can make over-optimistic estimates of outcomes that are a matter of chance or luck (Janis & Mann, 1977, p. 16).

Each participant joins a curriculum team with a set of knowledge and biases. It becomes obvious to a participant observer how readily knowledge is shared and developed, and prejudices tempered if the individuals are protected from threat or personal risk. This is particularly important in the early stages when the sense of valency and shared values is being established. The possession of interpersonal skills by curriculum managers is just as important as their organisational skills and curriculum knowledge.

## 7.4 ROLE CONFLICT

Curriculum developers see themselves as collectors and sorters of ideas, as mediators between conflicting interest groups, as managers making responsible decisions by weighing the educational, economic and political pressures and possibilities and dealing with them as imaginatively and efficiently as possible. In this sense, they are psychologists, philosophers and sociologists; they are organisers, arbitrators and directors; and they are innovators, change agents and producers of new ideas. Such an array of roles poses enormous challenges for curriculum developers. Is it any wonder that they resort to claims that decisions are made on the basis of experience and professional judgement? It is easier than identifying the myriad tasks and responsibilities inherent in the job.

Professionalism, however, contains its own ideology, and like other ideologies, it embodies elements of 'falsity' and 'obscurity' which are beyond personal choice (Billig, 1976). Once this is grasped, it enables us to better understand some of the conflicts in curriculum development, and why decision-makers feel they are making compromises rather than finding the 'correct' answers.

The ideology of curriculum professionals comes into conflict with that of teachers, industry, administration and professional associations, each with their own professional ideologies and each restricted by their own elements of falsity and obscurity. This can hinder them in finding one 'correct' answer together.

The Photography project offers the best example of this. Teacher professionalism was in direct conflict with curriculum and industrial professionalism, each sincerely believing that their way was 'right'. False elements in the ideology of the teaching group allowed it to impose what it believed were 'moral' answers over and above the empirical evidence of the industrial survey.

A majority of curriculum developers also see their role as professional in the sense of being 'creative'. There is a genuine concern among some that their talents and skills should not be diluted or their experience reduced to a check-list of tasks performed on the job. There is a fear that any attempt to produce set flow charts or models of decision-making would represent the reduction of the creative aspects of their work and would encourage less experienced people to restrict their approach to the rigid controls of a closed system. In such a recent and rapidly

growing field, every encouragement must be given to the practising curriculum developer to think creatively, with initiative and imagination, about all aspects of the development process. A recommended procedure or model would place a strait-jacket on the developer which would inhibit the discovery of new issues and directions. It would dampen enthusiasm and encourage laziness. All the important creative decisions are left out of models, but curriculm developers know they make them all the same.

On the other hand are the adherents of closed systems approaches. In Victoria, and to a lesser extent in the ACT, the Instructional Systems model is endorsed by TAFE Authorities, and it was the preferred system used by several of the case study developers in other States. The model is based on systems theory and is closed in the sense that it lays down a procedure for asking curriculum questions and finding solutions, by:

> examining the inter-relationship between the variables involved and anticipating the long range consequences of the manipulations of those variables. (TAFE Vic, 1980, p. 14)

Each curriculum variable is related to and interdependent on the whole. By working systematically through the steps and phases of the model, it is ensured that the right questions have been asked and that the curriculum is carefully planned. It ensures the relevance, objectivity and quality control of the entire curriculum. It is a systematic way of doing things and less experienced curriculum developers can train themselves in their craft as they practise using the model.

Role conflict is evident in increasing polarization between the followers of the open and closed systems models. It is an issue on which many developers have much to say, and although compromises were observed in the case studies, it is doubtful whether a middle way will emerge in the near future. One feels at times that preferred systems become like religions, with converts to and opponents against them speaking loudly and long of their new insights, wisdom and faith!

In this conflict lies an anomaly. One of the central tasks of curriculum development is to analyse and describe the behaviour, skills and attitudes required for training students for an occupation. Systems analysts use their own procedures for the training of curriculum developers, but the adherents of open systems refuse, or are unable, to

consider 'training' in this sense. They point to the rigidity of the systems model and make much of stories like that of the leaking tap, mentioned previously, to prove that the model does not gain in perfection what it loses in creativity and imagination. In resisting a closed systems approach they make it very difficult to analyse the training needs of their own occupation, except that it must be based on creative, forward-looking experience. Like anthropologists in the past who were advised to focus their research on cultures outside their own, must curriculum developers analyse and develop training for other peoples' occupations and not their own? It is possible that the interplay of human, economic, political and administrative factors is just too variable, too fluid, to be encapsulated in a model to suit all needs. One developer told the writer, categorically,

> There can be no such thing as a curriculum model; each situation presents a new set of circumstances and a new set of questions.

Sociologists have pointed to role conflict in areas of creative and cultural production. For example, Elliot (1977, p. 147) in a study of BBC producers, pointed out that on the one hand, are the 'demands of art', against the pressures of commerce, politics and career on the other. There is an implicit understanding among vocational curriculum developers that problem solving and decision-making is an art form, that is, professional judgement balanced creatively between the demands of educational integrity and industrial pressures. The curriculum developer spurns the connotations of 'training officer' in the same way that the fine artist dismisses the advertising designer as one who has sold out to the lesser ideals of commercialism. There is a similar rejection of the image of the developer as a 'creative artist'. Such people are seen as too romantic and Bohemian for the serious domain of curriculum development, and at best should be firmly relegated to the graphics or audio-visual department!

Like Elliot's BBC producers, curriculum developers see themselves as walking the tightrope 'between professional or craft standards and commercial judgement, between self-regulation and close bureaucratic control' (p. 148).

Closely related is the concept of the role of 'expert'. 'We are the experts', one curriculum officer told the researcher. 'We are in this job because we know what to do.' The danger in this, according to Elliot (1977, p. 152), is that being an expert suggests a claim to leadership, which

he feels can too easily become 'a claim to know better than the client what his needs are'. Curriculum developers do have a claim to leadership, and do sometimes claim to know better than industry what its needs are. Leadership claims prompt them to judge heuristically in struggles between employers and employees, between student needs and industry needs. The Beauty Culture decision to work with a small part of the industry is a good example. There is a fine line, however, between responsible leadership espousing heuristic procedures and one that is authoritarian and dogmatic.

'Professional', 'expert' and 'craftsman' are labels with positive values. Elliot (1977) claims that their meanings include 'skill and competence in the performance of routine work' (p. 149) and 'a mastery of technique' (p. 153). Such definitions should be seen alongside the creative and imaginative aspects of curriculum developers' work. As professionals they are required to work on both the technical and creative levels. This may create role conflict, especially among the less experienced or those in the early stages of their projects. The sixteen people interviewed appeared, at least superficially, to have had little difficulty working at the two levels as required. Some were obviously more imaginative or more technically thorough than others, but on the whole, and without necessarily being able to put it into words, they appeared to meet both the technical and the creative requirements of their work without any lasting conflict.

A further conflict, highlighted by a curriculum developer, exists in the increasing inclusion of a values component in new curricula. A great number of TAFE teachers were educated in the values and ethics of trade unionism. When teachers are appointed from industry, their values may alter to some degree in line with a changed sense of security or new image of themselves. The policy-making levels of TAFE on the other hand, tend to represent the professional and managerial classes. Industrial values are also relevant, both those of employers and employees. All these groups are represented in defining the values for formal inclusion in new courses, so whose values are eventually selected? This question indeed was uppermost in the Community Development for Aborigines and Islanders course development, because of the added dimension of cultural values needing to be included. Curriculum developers typically claim that they choose what is best for the student, and the case studies indicate that discussions along these lines did take place. Curriculum developers, however, are also influenced by their own values and conflict may occur. Students could be

subjected to a mismatch or distortion of the values they need to be taught; alternatively, amid the diversity of values represented in the TAFE institution, they could end up with the best of both worlds.

These are but a few examples of possible role conflict. There are doubtless many more, but the point has been made. Acquiring the ability to adapt to the dilemmas of role conflict may be a definable requirement of the role of the curriculum decision-maker.

## 7.5 WEIGHING AND BALANCING: MAKING JUDGEMENTS

The correlation between occupational data and the content of the case-study curricula was far from consistent. Only the Fitting and Machining team used an algorithm to select tasks for inclusion in the new course. It was based on the importance and frequency of the task in the work place. The Horticulture NCP team had access to similar information, with more than 250 pages of computer analysis of the job tasks of four trades. However, while the survey task list was referred to frequently, the analysis of importance and frequency was not completed and not used in making decisions in the Horticulture courses. Most of the curriculum developers interviewed certainly knew about formal analysis methods, and the computer capacity to handle them exists in all curriculum branches, but fifteen of the sixteen curriculum developers interviewed chose not to make their decisions this way. They justified this in different ways: such methods were too time consuming; too mechanical; they detracted from the more important human factors in decision-making; the response rate was always too low; the results were only as good as the questionnaire. Even these excuses were in retrospect. At the time of decision-making, they probably didn't attempt to justify their choice at all.

The interviewee who complained that there was too much data, concluded that a concise two-page questionnaire would have produced enough occupational data for the needs of the team. In the case studies where occupational data were available, it was read and noted by the developer or the team, and merely referred to when necessary in the context of all other data. In the case of teachers working in curriculum development, the common belief was that apart from 'a few surprises' they already knew about and accepted the information presented in the occupational survey. They claimed to have had no problem assimilating the 'few surprises' into the decision-making process.

No matter how detailed and extensive the occupational data collection, curriculum developers tend to make decisions as much on the strength of other, contextual data, and on their knowledge and experience of dealing with such data. Occupational data were sometimes rejected or added with no further comment or justification. 'Some data will only produce red herrings', said one interviewee, retrospectively justifying a decision. In other cases, such as the Fashion course, the curriculum developer went outside the locally produced occupational data and acquired further information which her experience suggested would be needed.

This reiterates one of the originally stated problems - how do curriculum developers make decisions about what data to use and what to reject for inclusion in the syllabus? On what basis does the curriculum developer choose to select and reject parts of the occupational data? What is it in their experience that enables them to make such decisions? What right have they to make these decisions? Obviously we are looking at a much broader model of decision-making than a one-to-one correlation with the findings of the occupational survey.

Curriculum decision-makers, like researchers, writers and administrators, constantly have reservations and make judgements about the information available to them. They do this by weighing and balancing the information against itself and against other accumulated knowledge. An experienced curriculum developer claimed that the different sources of data cannot be given equal weight in the decision-making process. Some sources of data are not trusted as much as others; some are regarded as less important. Each source is seen within the context of the experience and philosophy which inspires it. Some are seen in opposition to the experience and philosophy of the curriculum developer or of TAFE itself: the profit motive of commerce and industry; job maintenance concerns among teachers; inexperience on the part of students; militancy in some unions; personal ambition on the part of some TAFE administrators; bandwaggoning or zealotry by individuals. These are the pressure groups and power blocs sometimes found in curriculum development, and decision-makers must pick their way carefully among them, recognising the biases, and weighing their importance to the decisions to be made. The following comments were collected from both formal and informal discussions with curriculum developers and point to various forms of bias they may bring to their work.

- Management doesn't want apprentices to know too much outside the set task - they might become a threat to their jobs.

- Teachers are not likely to be in the vanguard of innovation - they don't like changing their notes and time tables.

- Students only know what they want, not what they need.

- The administration people kept making impossible demands.

- The older tradesmen kept telling us that the students needed more maths, just because they had to do lots of maths when they were training.

- The curriculum people kept adding more to the syllabus when it could not be justified at all.

One respondent referred to the hidden agenda of curriculum development, and the responsibility of the developer to recognise these and weigh them carefully in the process of making decisions.

> The hidden agenda are the real agenda. This problem is substantially reduced if good consultancy approaches are used - in a helpful sense, not as a policeman.

The hidden agenda, or those curriculum aims and constraints not committed to paper, include individuals who dominate discussions for their own ends as well as industrial, union or teacher groups. Sometimes their influence is visible and openly recognisable, but at others it is subtle and insidious. If the curriculum decision-makers don't identify it and act accordingly, they may be left feeling confused and unhappy about how decisions occurred. One respondent claimed, 'We decided what to include in consultation with all the pressure groups'. It is virtually impossible to please all pressure groups, and this respondent obviously meant that they 'listened' to all the pressure groups and then made judgements which helped them decide what to include in the syllabus. Another emphasised the consultancy aspect of decision-making, implying that her own personal beliefs should not be allowed to dominate any more than those of other groups.

> I am a creature of political pressures. What I believe about vocational education really counts for very little. That is the reality of it.

The reality of curriculum decision-making means balancing all the known data and making judgements on them. Making judgements requires many skills besides recognising bias and hidden pressures. If 90 per cent of industry personnel indicate that they don't want 'x' in the syllabus, and the State industrial training body declares that it does, a judgement must be made. If the 5 per cent of industry which identifies 'y' as a particularly important trend, represents the most progressive companies in the country, then the developer must look again at the answers suggested by the 95 per cent. If research reveals that 'z' is the most significant trend in vocational training in the United States or in Europe, the fact that it is not practised in Australia should prompt further thought. These types of questions can exist on every level and at every stage of the process, each situation slightly different from the rest, and none of them necessarily able to be solved by reference to other decisions.

This suggests another important factor which arises from the case studies. Curriculum development is assuming a proactive role in anticipating trends and changes. In the past, vocational curriculum development has tended to respond reactively to the needs and demands of industry. This has changed because of the need to keep up to date with rapidly changing technology. 'As the rate of change increases, the time lag which is intrinsic to the nature of reactive processes produces obsolete curricula' (Clover & Goode, 1982, p. 16). Changing technology causes job and skill requirements to alter far too quickly for curriculum development to continue to rely on reactive processes. Writing in 1982, Clover and Goode suggest that

> the alternative way is for vocational education to become more <u>proactive</u> and involved with the transfer of new technology from research and development laboratories to practical use in business and industry. This would imply a new role for TAFE. (p. 17)

Four years later the new role is evident in practice. The Fashion Design and Production curriculum is the most obvious example in the case studies, but most of the others were influenced to a greater or lesser degree by proactive principles.

Technological change, however, is not the only factor necessitating proactive processes. General education and life skills components are included in most of the newer curricula on similar grounds. Occupational Health and Safety are included in all the New South Wales case studies.

Assertiveness and other life skills components were written into the Community Development Certificate and the various secretarial courses. More and more often curriculum branches are now including such components, in line with TAFE's new role of anticipating changing needs and taking the lead in these times of educational and technological change.

# 8. CONCLUSIONS AND DIRECTIONS

## 8.1 EXPECTED PROJECT OUTCOMES

At the outset of this project, a number of discussions with curriculum researchers and developers focused on possible and desirable outcomes. What did the research expect to discover about the gaps in the curriculum process discussed in Section 1.5. What could it offer as an alternative to 'intuitive leaps' and 'professional judgements'? Was it looking for a technique of decision-making, whereby curriculum developers could be taught their job and be held accountable for their performance? Was it aiming to give them a procedure to increase their efficiency and confidence? Was it seeking the definitive model for curriculum decision-making in TAFE? Was it going to produce algorithms or formulae to steer curriculum developers through questions such as appeared in the original project brief:

- which learning should take place in a TAFE college and which should occur on-the-job?
- how should the content be balanced between initial career entry courses and subsequent courses?
- what is the appropriate amount of theory needed to support the skills to be developed?
- how can content be sequenced most efficiently?
- what account should be taken of escalation?

A further early question concerned the existence of patterns in various kinds of curriculum development. Were different procedures necessary for different kinds of courses? Were decisions different if the course content was established before the structure, or the structure before the content?

One of the earliest exercises in this research was to draw up a thirty-two step procedural chart of curriculum decision-making and to distribute it to TAFE curriculum practitioners to comment on, and try to improve it in the light of the curriculum development they were involved in. The comments and suggestions were so many and varied that it

was becoming evident that there were no patterns, and that curriculum developers worked in many different ways. One highly experienced person, after struggling with the exercise for some time, summed up his attempt in these words:

> A difficult task! I am clearly not satisfied with this. It still doesn't capture the real dynamic that causes decisions to be made. Pressures, priorities, energy levels, ability and readiness for change on the part of the lecturers, balance, precedents, etc. You never start with a blank sheet, and the factors can vary so much.

The gaps were obviously still there, and the procedural exercise had not helped identify or close them.

In choosing case studies as part of the research methodology, the researcher and the Advisory Committee kept their options open on possible outcomes. It was necessary to find out what curriculum developers did, what they said about their decisions and what they thought were the ingredients of decision-making. What were the major issues for them? Did they use formulae or algorithms to make decisions? Did they work in set procedural patterns? Did they want stricter guidelines or better techniques? Were they anxiously awaiting the ultimate vocational curriculum model to solve all their problems?

In this sense, the case studies guided the research, and it shortly became obvious that the original brief had not identified the right questions. The answers would always be different, according to the circumstances, because the circumstances were always different. There were no answers which were always right; there were few patterns or trends. Curriculum developers were not looking for a formalised way of answering curriculum questions nor a restructured procedure.

TAFE procedural literature is adequate. Each curriculum branch has produced, and appears to be continuously revising, various handbooks, manuals and flow charts to help the curriculum developer through the requirements of that particular TAFE system. These inform the developer of the committees and boards which have to be reported to during the process. They ensure the curriculum is properly supported and funded. They guarantee the course will be accepted and accredited. They provide the checks and balances the developer needs to work successfully within the system. Workshops in the various curriculum branches are

available to keep developers informed and up to date. When teachers are seconded to work in curriculum development, they are given training and guidance in the procedures laid down by their TAFE Authority. The procedural aspects of curriculum development can be assumed to be working reasonably well as none of the interviewees referred to them as a problem.

The research therefore was directed to those aspects of decision-making which were worrying curriculum developers most: the educational issues, the data collection and the hidden influences on them. The questions can now be redefined as:

- were curriculum developers aware of vocational educational issues and hence the curriculum options available to them? (See Chapter 2: Some issues in vocational curriculum literature)

- were they collecting and using all the data necessary for them to make effective decisions? (See Sections 3.3 and 3.4 on collecting and translating data)

- did they understand the hidden interplay of personal and social influences affecting their decisions? (See Chapter 7: Curriculum decision-making - discussion).

## 8.2 CONCLUSIONS

Knowledge of curriculum options is available within TAFE Authorities. Some of the major issues in the literature are outlined in Chapter 2, although much of it is unpublished. Curriculum developers are expected to keep up to date with these and other related questions. Some curriculum developers engage in research. Curriculum workshops are held in the various curriculum branches to disseminate and discuss new developments. Seconded teachers are presumed to know the options relevant to their field of expertise and their knowledge is added to curriculum knowledge. Although confusion does exist in the literature and more serious research is necessary, on the whole, evaluation is taking place and thought is being give to TAFE curriculum in Australia.

However, biases and knowledge gaps are discernible from the case studies. While a number of curriculum decisions are predetermined by outside factors, such as Industrial Award agreements, there are others, we must suspect, which are

made without proper assessment of the options available. The case studies brought to light considerable confusion on issues such as modules, self-pacing and mastery learning; a very uneven awareness of entry and exit issues, articulation and flexibility of testing; and the virtual neglect of distance education options and degrees of individualisation.

From this it can be concluded that curriculum developers, especially the less experienced ones, need a better grounding in curriculum issues and the curriculum options open to them.

The collection and use of relevant data is not a straightforward issue and is complicated especially by its newness as a field of activity in TAFE. The need for occupational needs surveys is now well enshrined in the philosophy and directives of TAFE curriculum branches, but the significance of such surveys and their manner of execution are not perceived in the same way by different TAFE Authorities or by individual developers within the curriculum branches.

All curriculum developers contacted discussed their experiences and their views on data collection, indicating that they believed it to be an important part of their work. This level of awareness, however, is relatively new in TAFE. Many who began in curriculum development even as late as the 1980s, can clearly remember examples of 'arm chair' development and 'desk jobs'. The process of systematic occupational analysis, coming initially from the United States, was difficult to learn and expensive to execute, and the number of experts in Australia has remained low. Simpler methods like DACUM and the Search Conference technique were adopted as alternatives by some curriculum branches. Less formal methods were tried as developers applied commonsense approaches to the theories of needs assessment.

Approaches are wide and varied and there are strong opinions for and against the various methods. This was evident from the case studies. Data were collected and never analysed; too much data were collected; 'fast track' methods were criticised; detailed task analysis methods were both extolled and condemned. The comments mainly concerned occupational data, but later problems indicated gaps in the collection and assimilation of all data - occupational, course and context. Problems were identified arising from resistance from accreditation bodies, teachers, students, funding and resourcing bodies and so on. Some of these problems could have been avoided if all context data had been available in advance.

The obvious conclusion is that at least some curriculum developers require more guidance and more confidence in the art of choosing which data are needed to make more effective decisions.

It is in the area of interaction of hidden personal, group and intergroup influences, however,that the bulk of the energy appears to be expended. This is the area which is least researched and discussed in its relation to curriculum development. The concepts have not yet been formulated, or even fully articulated.

Curriculum developers know these forces exist. They talk about them a lot, but as individually occurring problems, frustrations or battles of will. Many would see them as things which have gone wrong in the curriculum process, rather than as part of the process. The interviewees described their emotions and their states of mind in response to these forces and they were frequently negative: tiredness, frustration, lack of understanding, difficulty, jealousy and hostility were words occurring throughout the interviews. On the other hand, there was also the joy, triumph and satisfaction of decisions well fought and won.

The high emotional response of the curriculum developers to their work is a factor which this research did not anticipate, and it was not easy to report it within the structure of the case study chapters. Chapter 7 grew out of the parts of the interviews which could not be reported under the interview headings.

It is not easy to summarise the variety of fluid, complex and emotional situations with which curriculum development deals. It must cope with rapidly increasing mobility and knowledge on all fronts, with economic and technological fluctuation and change, and with an array of related psychological and sociological pressures, fears and expectations. These are the factors which worry curriculum developers.

Types of forces and influences are recognisable, and lists of related factors could no doubt be drawn up from listening to curriculum developers. But none of them would be constant. It is their fluidity and unexpectedness that makes them so difficult to tie down. This surely is the area of curriculum expertise which practitioners choose to call 'intuition' and 'professional judgement', as there are not, as yet, many other words to describe it.

The conclusion to be drawn here is that there is very little guidance available to help curriculum developers anticipate or deal with the hidden forces of the curriculum process, and further research is needed in this area.

## 8.3 TOWARDS A SOLUTION

Curriculum developers need help in three major areas: general curriculum issues, data collection and the 'hidden' influences on the development process. However, given the dynamic nature of curriculum development, and the uniqueness of each curriculum situation, it would be a serious mistake to advocate certain things a developer must know or do. Rather there should be a set of principles or guidelines with which developers are familiar, and within which they can search for appropriate answers to suit each different situation.

In the same way that a researcher develops a new and different proposal for each new project, curriculum developers should define the questions anew for each curriculum, read the relevant literature and choose suitable methods to collect their data. The methods cannot be predetermined, but should flow on from the questions.

The keynote of curriculum decision-making lies in adaptability and flexibility and it is with this in mind that the reader should study the guidelines set out in the rest of this chapter. Flexibility and adaptability, however, are themselves only relative. Even during the life of this project, there has been a growth in the importance of cost and time as the major constraints on curriculum decision-making. With these parameters overriding all other considerations, there is an even greater need for curriculum development to be flexible and for the developer to be adaptable. It also means that developers are likely to become more publicly accountable for their decisions. Accountability, in the sense of the guidelines set out in the following sections, means that developers can indicate that they fully understand the options available and can explain and justify their choices.

The following sections have been compiled from the issues discussed in this project and have been structured under three headings to reflect the conclusions reached in Section 8.2.

## 8.4 CURRICULUM OPTIONS

This section consists of a series of questions based mainly on the issues discussed in Chapter 2. Curriculum developers should be well versed in the changing educational debates surrounding these issues. Each question should be examined in the context of a further set of sub-questions, such as

- Are you familiar with the debate on this issue?
- Are you aware of the factors which could influence your decisions?
- What choice would you prefer in this particular case?
- Why?
- What do others involved in this project think?
- In what circumstances might you change your mind?

1. What methods and processes will you select to gather all the data you need?

2. How will you ensure an acceptable balance between training needs and general education?

3. How will you select the tasks which should be included in this course, which ones will be omitted or deferred to a later course and those which could best be taught on the job?

4. What will your priorities be in structuring and sequencing the components of this particular course?

5. To what extent will you consider articulation and escalation in planning this course?

6. Will you choose a subject or modular approach or a combination of both?

7. Is it necessary to reconsider or extend the normal practice on entry level provisions?

8. Will you choose marks or mastery methods of testing and assessment in these circumstances?

9. Will students taking this course benefit from self-learning methods and materials?

10. Are there other educational issues which should be considered in developing this course? Such as

- access, equity and participation
- transfer of credit
- need for life skills, remedial skills and broad educational skills
- proactive development
- staff development
- principles of adult education
- distance education options
- resource development
- implementation.

## 8.5 CURRICULUM DATA

The underlying principle of data collection is that curriculum developers should have the right amount of relevant information to answer the questions which will come up in the development process. It must be collected in the most cost-effective manner possible. These questions provide a guide to the sort of data you will be seeking.

1. Do you have sufficient occupational data to indicate

- the need for curriculum development
- the rate of change in the industry
- future impact of technological change
- specific skills needed
- competencies and qualities needed
- employee characteristics
- employee mobility
- prerequisite student requirements
- potential for co-operative TAFE-industry training
- manpower planning policies
- registration/accreditation requirements.

2. Do you have data on the expected student group?

- age
- sex
- educational background
- work experience
- geographical distribution
- special needs.

3. Do you have data on previous or similar courses?

- attrition
- length
- attendance patterns
- subjects or modules
- amount of choice
- level of difficulty
- entry requirements
- entry and exit points
- articulation
- mode of study
- tests and examinations
- relevance to client groups
- problems
- parts which can be used in new course.

4. Do you have data on the constraints of

- government policy
- professional associations
- unions
- accreditation bodies
- TAFE policy and procedures
- finance, time for development
- finance, time for course
- TAFE colleges
- staff development
- materials and equipment needed.

## 8.6 HIDDEN CURRICULUM INFLUENCES

Hidden curriculum influences are the most complex and most neglected part of the curriculum decision-making process. The following questions are in the form of a check-list of ideas, insights and techniques which curriculum developers have experienced in their work. They are offered here more to encourage further research and discussion than as a panacea for all the problems of curriculum development. They are set out in the order in which they occur in the discussion in Chapter 7.

1. Are you familiar with various negotiating strategies and expectations you might need in curriculum development?

   . bargaining
   . making compromises
   . lobbying
   . the art of gentle persuasion
   . building good relationships
   . incremental change
   . limited reform
   . pragmatism
   . careful planning
   . growth of concepts.

2. Are you conscious of the factors of sharing which could be significant in improving curriculum development?

   . evolution of concepts
   . dissemination of information
   . keeping in touch with others' efforts
   . borrowing ideas
   . growth of professional trust
   . communication.

3. Are you comfortable with group processes and the interpersonal skills which might influence the curriculum outcomes?

   . group dynamics
   . social, intellectual and professional rules
   . personal effort
   . control and ownership issues
   . the use of outside experts
   . valency
   . generating solutions
   . taking risks
   . stages of decision-making
   . jumping decision-making stages
   . bias
   . knowledge set

4. Are you able to adapt to the dilemmas of role conflict?

   . professional ideology
   . falsity, obscurity and morality
   . creativity and technical expertise
   . closed and open systems

- commerce, politics, career and artistic integrity
- educational integrity and industrial pressure
- self regulation and bureaucratic control
- leadership
- conflicting value systems.

5. Are you able to weigh and balance the factors threatening to influence your decisions?

- weighing the data
- judging importance of data
- recognising bias
- the concept of hidden agenda
- interest groups
- political pressures.

APPENDIX A

## INTERVIEW GUIDE FOR CURRICULUM DEVELOPERS

### PART A: EDUCATIONAL NEEDS ANALYSIS

1. Occupational data

**Was there an occupational survey and analysis?**

- what form did it take?
- what methods were used?
- how detailed was it? (duties, jobs, tasks, skills?)
- importance and frequency of task? (significance and relevance?)
- how long did the survey and analysis take?

**Who had input to the occupational survey?**

- what sections of the industry did it reach?
- did instructors have any input?
- did curriculum developers have any input?

**What future industrial requirements did it identify?**

- labour needs forecast?
- short term? long term?
- technological change?
- type of student to be trained?

2. Existing course data

**What was known about students in similar courses?**

- age?
- geographical distribution?
- average educational/experience background?
- attrition?
- special needs?
- anything else?

**What was known about structure of similar courses?**

- subject choice? (electives available?)
- compulsory core?
- full time, part time?
- block, day release?
- on, off campus?
- problems?
- anything else?

3. **Context data**

**What was known about policy/regulations/constraints?**

- government?
- TAFE Authority?
- finance, time, space?
- choice of training institutions?
- instructors, counsellors?
- materials and equipment?
- accreditation body?
- unions?
- professional associations?
- anything else?

**PART B: CURRICULUM DECISION-MAKING**

1. **On each of the following, how were decisions made and on what basis?**

**How did you decide on course structure?**

- level of course?
- length of course?
- type of course?
- qualification?
- entry requirements?
- full time, part time?
- day or block release?
- self-paced or lock-step?
- on or off campus?
- subject based or modular?
- subject/unit choice? (core, options?)
- links with other courses? (existing or future)

**How did you decide on course content?**

- what to include, what to reject?
- weighting of general education, theory, practical, skills development and general industrial experience?
- values and attitudes?
- content included for articulation/mobility reasons?
- content included for personal development reasons?
- division into units/subjects/modules?
- sequencing?

**How did you decide on course assessment?**

- relationship of objectives to tests?
- type of testing chosen?
- frequency of testing?
- number of attempts on each tests?
- marks, mastery?
- importance of testing in overall assessment?
- internal, external assessment?
- standards?
- conditions?
- what constitutes 'failure'?

2. <u>Give your opinion on the following</u>

**What were the most vital decisions?**

**What were the most difficult decisions?**

**What were the most successful decisions?**

**What were the least successful decisions?**

**Can you suggest possible improvements in the curriculum process?**

- data collection?
- data analysis?
- decision-making procedure?
- other things?

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